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NARRATIVE

OF A

VOYAGE ROUND THE WORLD,

PERFORMED IN

HER MAJESTY'S SHIP SULPHUR,

DURING THE YEARS 1836—1842,

INCLUDING DETAILS OF THE

NAVAL OPERATIONS IN CHINA,

FROM DEC. 1840, TO NOV. 1841.

Published under the Authority of the Lords Commissioners of the Admiralty.

X-a-3

BY

CAPTAIN SIR EDWARD BELCHER, R.N.

KNT., C.B., F.R.A.S., &c.

COMMANDER OF THE EXPEDITION.

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IN TWO VOLUMES.

VOL. I.

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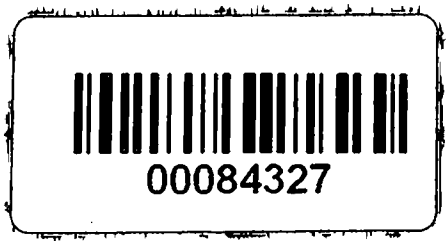

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TO

THE RIGHT HONOURABLE

THE EARL OF HADDINGTON,

FIRST LORD COMMISSIONER FOR EXECUTING THE OFFICE OF LORD HIGH ADMIRAL OF GREAT BRITAIN AND IRELAND, &c., &c., &c.,

THESE VOLUMES,

CONTAINING

THE NARRATIVE OF A VOYAGE ROUND THE WORLD,

ARE, BY HIS LORDSHIP'S PERMISSION,

INSCRIBED,

WITH THE GREATEST RESPECT,

BY

HIS OBEDIENT SERVANT,

E. BELCHER.

PREFACE.

VOYAGES undertaken for the express purposes of Maritime Discovery have always been received with so much favour by the British public, and especially when made (as in the present instance) by British officers, and under the direction of the British Government, that the writer of the present Narrative of a Voyage Round the World confidently trusts he will not be denied that indulgence which has been uniformly accorded to those who have preceded him. He hopes for such indulgence the rather that, although the practical results of his labours have been necessarily less fertile of novelty, and therefore of popular interest, than those of his more distinguished predecessors, they have not been less arduous or onerous to the individuals engaged in them.

In order that the scope and extent of the objects contemplated and attained, in this Voyage Round the World, may be judged of, it may be well to precede the narrative by a brief outline of its contents.

Her Majesty's ship Sulphur was commissioned in September, 1835, by Captain Beechey, and, accompanied

by her consort the Starling, Lieut. Commander Kellett, quitted England in the following December. Captain Beechey invalided at Valparaiso, and was succeeded by Acting Commander Kellett, who was again superseded by the author of the present narrative, who took the command at Panama, in February, 1837, having crossed the Isthmus of Darien for that purpose, and retained it till the conclusion of her protracted voyage. After some little delay in completing certain necessary operations, the two vessels proceeded northerly, touching at Realejo and Libertad in Central America, and reached San Blas in June, 1837, whence she sailed for the Sandwich Islands, which she reached the following month.

Port Etches, in King William's Sound, in 60° 30′ N. was the next destination of the Expedition. Point Riou and Port Mulgrave were chosen as base stations for determining the position of Mount St. Elias, and further settling the question of longitude between Cook and Vancouver. The Sulphur then proceeded to Sitka or New Archangel, in Norfolk Sound, where the officers received very courteous treatment from Captain Koupreanoff, the Russian governor. She next visited Friendly Cove, in Nootka Sound, and thence sailed to San Francisco, when the examination of the river Sacramento, one hundred and fifty-six miles from her anchorage, occupied the party in open boats for thirty-one days. Thence the Sulphur successively visited Monterey, San Blas, Acapulco, and Libertad, on her way to Realejo, where the author, for the recovery of his health, undertook a land survey of the principal mountains overlooking his future ground in the

Gulf of Papagayo, and fixed the principal features of the Lake of Managua, to its fall into that of Nicaragua at Tepitapa. After surveying the Gulf of Papagayo and Port Culebra, the Sulphur quitted Central America, touched at, and fixed Cocos Island, and reached Callao in June, 1838, for the purpose of refit, and the completion of stores and provisions. Having examined the coast between Cerro Azul and Callao, (about sixty miles,) she left Callao in August, calling at Paita and Guayaquil, and returned to Panama in the following October.

Here may be said to have ended her first cruize; but between October and March a survey was made of the Gulfs of Fonseca and Nicoya, Pueblo Nueva, and Baia Honda, after which the ship moved northerly, repeating her cruize of 1837. She was detained at the Columbia River till September; Bodega, the Russian position near San Francisco, was then surveyed, and subsequently San Francisco, Monterey, Santa Barbara, San Pedro, San Juan, San Diego, San Quentin, San Bartolomè, the Gulf of Magdalena, and Cape San Lucas. The Sulphur then proceeded to San Blas and Mazatlan, where orders for a westerly return awaited her. Having shipped supplies for fourteen months from a transport which had been sent to meet her, she commenced her homeward voyage in January, 1840; *en route* the author landed on the islands of Socorro and Clarion, and secured their positions. She reached the Marquesas the same month, and after a short visit to Port Anna Maria, Nuhuhiva, moved on to Bow Island, where the operation was performed of boring for the volcanic foundation on which these coral

islands are suspected to stand. She then visited Tahiti, Huaheine, Raratonga, Vavao, (Tonga group,) Nukulau, (Feejees,) Tanna, (New Hebrides,) Port Carteret, (New Ireland,) Britannia Island, New Guinea, coasting that island to Arimoa and as far as Jobie, where she remained to rate and survey; then to Amsterdam, Pigeon Island, (Dampier's Straits,) Bouro and Amboina, moving thence to Macassar, Great Solombo, and Pulo Kumpal, off the Borneo coast; and reached Singapore in October of the same year.

Orders here awaited her to proceed instantly to China, where she was detained, and took an active part in the operations against the Chinese, till nearly the close of the year 1841, when she sailed for England. After leaving Singapore, and touching at Malacca, Penang, Acheen, Sumatra, Point de Galle, (Ceylon,) Séchelles, Madagascar, Cape of Good Hope, St. Helena, and Ascension, she at last returned to Spithead.

The account of the voyage has been carefully drawn up from the author's own memoranda, made when the places and incidents they describe were under his observation, and the illustrations are faithfully given from existing scenes and objects.

In conclusion, the author desires to aknowledge his obligation to Mr. Hinds, the Surgeon to the Expedition, for his valuable and interesting account of the vegetable regions, which will be found appended to the second volume of the narrative.

E. B.

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HYDROGRAPHIC INSTRUCTIONS

FOR

CAPTAIN BEECHEY,

SUBSEQUENTLY FOR

CAPTAIN BELCHER.

THE general objects of the expedition which has been placed under your command having been set forth in their Lordships' orders, it becomes my duty to enter somewhat more diffusely into the nature and details of the service which you are to perform.

The first point to which your orders advert after quitting England is the Eight Stones. You will probably add one more to the many testimonies which have been already collected of their non-existence, at least in the position assigned to them in the old charts; but before we venture to expunge them it would be satisfactory to make all the inquiry in your power at Madeira, respecting the traditions on which their existence is asserted.

In approaching the coast of Brazil, you will have a good opportunity of verifying or discarding the bank of sound-

ings which has been adopted in our charts, from a circumstantial account in the remark-book of the Fly, within a week after her leaving Bahia, and with chronometer on board. For this purpose it will be proper to run down the parallel of 16° 50 S., (or 16° 55, so as to allow for the northerly current,) and to carry in a chain of deep sea soundings from about the longitude of 35° 30 W., till in 37° 30 W. From thence you may shape an extremely useful course, so as to round Cape St. Thomé and Frio at such a distance, if the wind will permit, as will enable you to intersect some very discordant soundings which have been inserted in the chart, from different but apparently good authorities. One well determined line of genuine depths will go far to elucidate all the difficulties.

At Rio de Janeiro, or at Santa Catharina, you will have an important task to perform, and the choice of the two places is of no moment, provided the chronometers enable you to determine their meridian distance with precision. The longitude of the former has been reduced within very narrow limits, by various observers, and a vast number of observations of various kinds, the mean of which gives 43° 8 W., for the little island of Villegagnon; but as every change of a standard meridian is attended with great inconvenience to seamen, it may be hoped that a good series of moon-culminating stars may now put the question at rest, so that no further alteration will be requisite, at least for nautical purposes.

As magnetic phenomena are objects of much scientific interest at present, you should not lose the opportunity of obtaining some careful observations of dip and intensity, at one of the above places, and likewise at one of the high southern positions where it was obtained by Captain P. King. Port Famine would be well adapted to the purpose

if other circumstances should not render that route inconvenient, and the more so as it was the standard meridian to which he referred all the longitudes of his survey.

From thence there will be nothing to delay your progress towards that part of the western coast where Captain Fitzroy's late survey terminated. Unfortunately no account of his concluding operations has yet arrived, but by a comparison of dates it does not appear that there could have been time to examine much of the coast of Chili, to the northward of Valparaiso, or even to complete it down to that port. This question must be decided, because at no great distance to the southward lie the shoals of Topocalmo, where an American ship was wrecked, and which, if they have not been satisfactorily laid down by him, and their connexion with the shore examined, must not be neglected by you.

It is, however, probable that at Valparaiso you will be able to obtain such information on that subject, as may help to guide your movements; but if not, there will be little danger of repeating any part of his work if you commence yours at Coquimbo, leaving the interval to be hereafter effected, when the return of the Beagle, or the arrival of her despatches, shall enable me to define more exactly the point at which the great work assigned to you by their Lordships ought to begin.

Of that extensive region which your work is to comprehend, we are at present best acquainted with the southern portion, including Chili and Peru. Yet of those long and populous coasts, excepting the ports of Guayaquil and Callao, our whole knowledge is derived from two Spanish charts, on the limited scale of one inch to twenty-eight miles; and it appears from Captain Fitzroy's recent examination of the large island of Chiloe, and of the intricate gulf of Chonos, that those charts

are evidently the result of mere running of surveys. The half-knowledge to be obtained by this kind of survey, has always acted as a check on the advance of geographical and nautical information, and is in itself useless; for the native coaster wants nothing beyond his local experience; the regular foreign trade employs a pilot; and the occasional visitor sees that all the details are so unlike the truth, that he does not even attempt to correct;—and thus our enterprising carriers in peace, and our active cruizers in war, find themselves equally foiled in their operations along shore. These evils can be remedied only by correct charts, on scales appropriate to the greater or less intricacy of their contents, and showing the true shape and nature of the shore, the positions of the towns, the places for anchoring, the depths on the bank, and the appearance of the land, as it makes in the offing. The present state of science, and the excellence of modern instruments, afford ample means for acquiring this knowledge with comparative facility, and our western American commerce has long been in need of such charts; but especially now, that the impulse it has received from the revolutions of those rich but only half maritime countries, has brought our vessels into contact with every port from Valdivia to the Columbia.

In carrying this great survey into effect, their Lordships have placed the fullest reliance on the unabated zeal and talents which you have heretofore displayed, and they have cautiously and wisely abstained, in your orders, from fettering you in the selection of your ground, or in that division and disposition of your time, which the periodic changes of season, or the occasional necessities of the vessels, may require. If, therefore, Providence permits you to preserve your resources unimpaired, and if the several governments interpose no obstacles, you

will, doubtless, pursue this important work, with all the energy in your power, and with all the perseverance consistent with a due regard to the health of your officers and crews.

Where their Lordships have placed such unlimited confidence, it would ill become me to enter too minutely into the lesser pursuits, which are connected with the main object of the coast line; but there are some detached islands and dangers to which it is proper to advert, and to which it is necessary to call your attention.

In crossing from one division of the survey to the other, you might visit and determine the position of the little islands of St. Felix; for though they can offer neither resources nor shelter, yet such insulated specks in the ocean are often useful to the mariner in rectifying his longitude.

A little further to the westward, the brig Cannon, in 1827, discovered a dangerous reef, of half a mile in length, which she called the London Bank, and placed in 27° 6 south, and 92° 16 west, and which it would be useful to verify.

If there be any truth in the report that the earthquake of February has considerably shaken the island of Juan Fernandez, it might be useful to stretch over there, and to examine if any material change has really taken place in the anchorage. Some other extraordinary effects of this earthquake are said to have occurred on the coast of Chili, in permanently elevating part of the shore, and in changing the depth of the adjacent sea. These assertions, if at all true, are probably exaggerated, and you will render a service to geology, by minutely inquiring into the circumstances, and communicating the result without delay.

It may be hoped that Captain Fitzroy has sufficiently

examined the Galapagos, and therefore, till that is ascertained, your time should not be occupied there.

Cocos Island is stated by Vancouver to be only four miles in length, while, according to Collnet, it is not less than four leagues ; and its position being also imperfectly known, it should be visited. The little solitary islet of Malpelo should likewise be definitively placed. The islands of Revilla, Gigado, &c., will naturally be included in your general chart of California.

Further off, in 16° North, and about 130° West, a large group of coral islands is supposed to have been seen. It is not probable that you will have to stand so far out in any of your traverses, but if accident should lead you near them, it will be proper to establish their position, and to ascertain their general character.

Political circumstances have invested the Columbia river with so much importance, that it will be well to devote some time to its bar and channels of approach, as well as to its inner anchorages and shores.

In touching at some of the points of Vancouver's survey, you will perceive, that unless in any cases of gross error, it is not their Lordships' intention that you should do more than rectify the general longitudes in the chart of that officer, as they are probably quite adequate to any interest that is felt at present about that archipelago of islands. If, however, you have a convenient opportunity, it will be desirable to ascertain whether there is not a broad sea passage through his King George Island, dividing it into two islands.

As the terminal point of your whole survey to the northward, the magnificent mountain of St. Elias may be named; and its exact position and height should therefore be determined.

Next in importance to the accuracy of the coast line

and of the shoals, is the precision and fulness of the soundings, with the quality of the bottom. There can be no doubt that the nature of the substances which are spread over the bottom of the sea does not depend on mere chance, but that they are in some measure connected with the adjacent shores, and sometimes with those of more distant parts of the coast, from which they have been swept by currents; and it would be a great benefit to navigation if this relationship could be satisfactorily traced. The transition also from one species of sand to another, and the link by which these beds or patches are connected, are subjects which would be well deserving the reflection and exertions of our scientific mariners. Besides the soundings to be carried along shore, (the breadth of which zone, proceeding from the back of the rollers, will depend on their depth and regularity,) the outer edge of the bank should also be laid down, as being a most important aid to the navigator, and a sufficient number of depths marked in the intervening space, to show the general slope of the bank. This outer edge may be assumed at a hundred fathoms, as in general it rapidly sinks from that depth, to one beyond the usual reach of the lead. Massey's machine should not be used in a greater depth than fifty or sixty fathoms.

In approaching the several groups of islands, and in the various runs which either vessel may have to make in the course of the survey, at a distance from the land, no opportunity should be missed of throwing down the deep sea lead. The negative language of no bottom soundings on the charts, is next in value to the real depth; and, unless when pressed in time by some paramount object, it should be the established practice of a surveying vessel, both night and day, though apparently

remote from any bank, to have a deep cast of the lead every ten or twenty miles, according to the distance from the shore. This might sometimes lead to useful discoveries; and in order to abridge the labour, as well as to prevent the unwholesome effect of wet sleeves, the sounding winch should be always employed on these occasions.

No consistent account of the currents along the western American coast has been yet framed, though in no part of the world would it be of more importance and value. Observations, therefore, to determine the direction and strength of the current, should not be left to be inferred from the mere error of the dead reckoning, when traversing the sea in the offing, nor to the casual set of the boats when employed in-shore, but should be systematically made, for the express purpose of forming a general view of this interesting subject, and which can only be effected by a great accumulation of data.

In applying this rule to the extensive ocean which will be more than once traversed by the present expedition, it may be as well to divide the inquiry into distinct questions.

1. The actual set and direction of the current in all parts that the vessels may visit.

2. Are the currents permanent, or in what degree are they modified by the daily sea and land breeze, or by the periodic monsoon, or by the issue of the large rivers?

3. To what distance does the regular current extend from the coast? and where do the neutral space and counter-current begin?

4. Is the general direction of the permanent current parallel to the shore, or oblique?

5. To what depth do these currents extend downwards?

The comparative temperature of the atmosphere and

the sea whenever the current runs from the northward or southward, should be continually observed, and marked in the log. A series of such observations would show under what circumstances the thermometer will indicate the effect of currents.

A minute examination of the tides, including all those data by which they may be accurately calculated, their local set, and the extent to which they are influenced by the periodic winds, and by the sea currents, are so evident a part of your survey that it need not be dwelt on here. When practicable, their extreme height at the springs should be referred to a fixed object on the shore.

You will be furnished with a scale by which the force of the wind is to be expressed, and certain abbreviations by which the weather may be correctly described, and these are invariably to be employed in marking the log-board and log-books of both vessels.

The periods and limits of the trade winds, monsoons, and rains, will no doubt be a constant object of your study. It is true that your observations of them must be confined to the place where your vessels are; but still you will be able to collect a large number of accurate facts; you may perhaps pick up some authentic information from others; your journals of the Blossom and those of former navigators, will supply many connecting circumstances; and I feel confident that on your return home you will present to their Lordships the first consistent account of this interesting subject. Hitherto the practical seaman knows not where to seek for the periods of change, which are so essential to the due performance of his voyage; and those who would investigate and generalise the laws of these curious phenomena cannot find any distinct statements on which they can rely.

No possible pains should be spared which may throw any light on the hitherto inexplicable form of the curves which unite the degrees of equal magnetic variation, or on the annual motion of those curves to the east or to the west.

The diurnal arcs of variation should also occupy your attention in favourable situations; and it will be very interesting, if, by multiplying observations, you can either confirm or refute the assertion that there is a constant difference between the variation on the east and west sides of an island, independent of that due to the space it occupies. The restrictions under which these delicate observations should be made will readily suggest themselves to you. No subject can be of greater importance to navigators than the laws which affect their compass, and none should be pursued with more perseverance; azimuths and amplitudes should be obtained *every day*, and under every variety of circumstance, as well on shore as on board; and the latter, whenever practicable, should be made with the ship's head either north or south, or rather on the line of no deviation, as shown by the table which will have been formed in each vessel, of her local attraction.

The local attraction, however, varies in the ratio of the dip; it should, therefore, be carefully retried, (on every point of the compass,) at both extremes of the survey, as well as near the equator, and a full report of each trial transmitted to this office.

Observations for the dip and intensity should be made at different points of the coast, carefully avoiding the neighbourhood of any place which may be likely to influence the needle.

Nautical descriptions of the places comprised within the limits of the Survey, and clear directions for the

ports and dangers, adapted to all classes of seamen, will obviously be among the essential parts of the survey; but there will also be opportunities of collecting auxiliary information which, when digested, may be made extensively useful to those who may have to visit that coast;—such as places of refuge after any disaster at sea; ports where pilots are requisite; the most advantageous methods of obtaining water, wood, and other supplies; the general resources and productions on which vessels may depend; the usual effects of the climate in the rainy and in the dry seasons; and notice should be given of those spots which are peculiarly unhealthy. In short, no facts can be useless in compiling directions hereafter.

It has been suggested by some geologists that the coral insect, instead of raising its superstructure directly from the bottom of the sea, works only on the summits of submarine mountains, which have been projected upwards by volcanic action. They account, therefore, for the basin-like form so generally observed in coral islands, by supposing that they insist on the circular lip of extinct volcanic craters.

In order, by a satifactory experiment, to bring this question to a direct issue, their Lordships have ordered you to be supplied with a complete set of the boring apparatus used by miners; leaving it to your own judgment to select any coral island which may be well adapted to the purpose, and which will lead you as little as possible from the line of your survey. They wish you to fix upon a convenient spot of the island where the operation cannot be disturbed by the surf, and there to bore perpendicularly, so as to perforate the whole thickness of the coral, and to enter the tool suffi-

ciently deep in the rock on which it is based to furnish specimens for future analysis. You will of course keep a register of the contents of the auger every time it is withdrawn, and if the structure or density of the coral appear to change, it will be desirable to have a series of such specimens also preserved, and tallied with their corresponding depths.

Immediately that the bore hole arrives at its greatest depth, provided no water has been allowed to enter, it will be well to contrive some method of sending down a registering thermometer, so as to ascertain the temperature of the bottom of the hole.

Hitherto it has been made a part of the duty of all the surveying vessels to keep an exact register of the height of the barometer, at its two maxima of nine, and its two minima of three o'clock, as well as that of the thermometer at the above periods, and at its own day and night maximum and minimum, as well as the continual comparative temperature of the sea and air. This was done with the view of providing authentic data, from all parts of the world, for the use of future labourers in meteorology, whenever some powerful mind should happily rescue that science from its present neglected state. But those hours of entry interfere so much with the employments of such officers as are capable of registering those instruments with the precision and delicacy which alone can render these data useful, that I do not think these journals should be further required. The daily height of the former, and the extremes of the thermometer, will be sufficient to record, unless from some unforeseen cause you should be long detained in any one port; a system of these observations might then be advantageously undertaken.

There are, however, some occasional observations which cannot fail of being extensively useful in future investigations.

1. During the approach of the periodic changes of wind and weather; in which case the hygrometer also should find a place in the journal.

2. The mean temperature of the sea at the equator, and under a vertical sun. These observations should be repeated whenever the ship is in either of those situations, as well in the Atlantic as in the Pacific; they should be made far away from the influence of the land, and at certain constant depths, suppose fifty and ten fathoms, and at the surface, and the latter ought to be again observed at the corresponding hour of the night.

3. A collection of good observations systematically continued, for the purpose of connecting the isothermal lines of the globe, and made as above at certain uniform depths.

4. Some very interesting facts might result from a comparison of the direct heat of the solar rays in high and low latitudes. The two thermometers for this purpose should be precisely similar in every respect; the ball of the one should be covered with white kerseymere, and of the other with black kerseymere, and they should be suspended far out of the reach of any reflected heat from the ship, and always at the same elevation above the surface of the water; the observations should be made out of sight of land, in a variety of latitudes, and at different hours of the day, and every pains taken to render them all strictly similar and comparative.

5. All your meteorologic instruments should early in the voyage be carefully compared throughout a large extent of the scales, and tabulated, for the purpose of

applying the requisite corrections when necessary, and one or more of them should be compared with the standard instruments at the Royal Society or Royal Observatory on your return home.

6. All observations which involve the comparison of minute differences, should be the mean result of at least three readings, and should be as much as possible the province of the same individual observer.

7. In some of those singularly heavy showers which occur in crossing the equator, and also at the changes of the monsoon, an attempt should be made to measure the quantity of rain that falls in a given time. A very rude instrument, if properly placed, will answer this purpose; merely a wide superficial basin to receive the rain, and to deliver it into a pipe whose diameter, compared with that of the basin, will show the number of inches, &c., that have fallen, on an exaggerated scale.

8. It is unnecessary to call your attention to the necessity of recording every circumstance connected with those highly interesting phenomena—the Aurora Australis and Borealis; such as the angular bearing and elevation of the point of corruscation; the bearing also of the principal luminous arches, &c. &c.

9. It has been asserted that lunar and solar halos are not always exactly circular; and a general order might therefore be given to the officer of the watch to measure their vertical and horizontal diameters whenever they occur.

Large collections of natural history cannot be expected, nor any connected account of the structure or geological arrangement of the great continent which you are to coast; nor indeed would minute inquiries on these subjects be at all consistent with the true objects of the survey. But at the islands, and even along the

coast, to an observant eye, some facts will unavoidably present themselves, which will be well worth recording, and the medical officers of both vessels will no doubt be anxious to contribute their share to the scientific character of the Survey.

F. B.

19*th December*, 1835.

INSTRUCTIONS

TO

CAPTAIN BEECHEY,

SUBSEQUENTLY TO

COMMANDER E. BELCHER.

By the Commissioners for executing the office of Lord High-Admiral of the United Kingdom of Great Britain and Ireland, &c.

You are hereby required and directed to take the Starling, surveying vessel, under your command, (the lieutenant commanding her being directed to follow your orders,) and the Sulphur and Starling being in all respects ready, you are to put to sea and to proceed with her to Plymouth Sound, for two chronometers which have been selected for you there, and having determined your chronometric departure from the west end of the breakwater, you are to make the best of your way to the

supposed place of the Eight Stones, and crossing the parallel of 34° 45 north, in the longitude of 16° west, you are to spread the Starling to the westward, according to the clearness of the weather, so as to make sure of discovering any broken or discoloured water in the interval between the two vessels.

You are also to get a few deep casts of the lead, when passing the alleged place of that shoal.

You are then to repair to Madeira, to verify the rates of the chronometers by the standard meridian of Funchal, or if that be impractible from the state of the weather, you are to proceed to Teneriffe for this purpose.

Every exertion is then to be made to cross over to America with the least possible delay, and to approach it on the parallel of 16° 55 south, in order to fix the outer limit of the Abrothos Bank. In that latitude you should carry on a series of sea-bottom soundings from 35½° west, till you have arrived fairly on the main bank, or in 37° 30 west, when, crossing the banks to the southwards, with a line of soundings, you are to proceed to Rio de Janeiro.

At that place you will not only obtain satisfactory ratio of the chronometers, but by setting up the transit instruments, a few nights 'observations of moon-culminating stars, will enable you, it may be hoped, to settle finally its longitude.

If, however, the moon should there be unfavourable, the same object may be equally well obtained at Santa Catharina. The coast, between these two places, has been sufficiently surveyed by Le Baron Roussin, but their meridian distance requires confirmation, and your means are fully capable of dispelling all further uncertainty.

From Santa Catharina, you are to pass forward towards the passage between the Falkland Islands and

the Main, and taking nearly the mid-channel, you are to sound freely between the latitudes of 50° and 53° S., there being good grounds for believing that the bank which unites that group of islands to the continent, is within the reach of the deep-sea lead.

You are then to round Cape Horn, or proceed by the Strait of Magellan, as you may find most eligible, and to make the best of your way to Conception, up to which place it may be supposed that Captain Fitz-Roy has fully completed his survey, although he may possibly have carried it as far as Valparaiso.

This point, however, can be easily ascertained at one of those ports, and from wherever it may appear to have been terminated, you will forthwith begin the great work which has been confided to you by us; or if there should be any doubt about the limits of Captain Fitz-Roy's labours, you may safely commence at Coquimbo, beyond which, in the time consumed by the Beagle, they could scarcely have extended.

When Captain Fitz-Roy's missing despatches arrive, that point will be communicated to you; and if any part of the above interval should not have been examined, and particularly the dangerous banks off Topocalmo, you can easily resume your operations to the southward, so as to include them.

As Rio de Janeiro may be considered the standard point to which it is so convenient to refer the meridian distances obtained on the eastern side of America, so there should be a similar point on the coast of Chili. The choice of that station we leave to you, and there you will again establish the transit instrument, and determine the difference of longitude from Greenwich.

The extent of coasts along the western side of America

is so great that the utmost energy will be requisite in conducting the necessary observations, and can be effected in any reasonable time only, by skilfully combining them with the changes of seasons which take place at alternate periods of the year to the north and south of the Equator. On the approach, therefore, of the monsoon to the coast of Peru, you are to make the utmost expedition in removing both vessels to California, where San Francisco offers a healthy and convenient spot for fresh rating the chronometers.

Little is known of this great country except that it is rapidly increasing in population and commerce; and as it contains but few harbours, its shores steep, and the approaches bold, there will be little motive for detention between San Francisco and the district visited by Captain Vancouver.

You will then have an excellent opportunity of verifying the longitudes of two or three of the above officer's principal points, which differ materially from those which Senor Quadra and the Spaniards have assigned to them, and on which therefore depend the whole form of that coast.

From this region you will again pursue the survey to the southward along to the shores of Guatemala and Mexico, and so on, alternately changing your ground according to the periodic change of weather, till in a succeeding season you will have met the operations proceeding to the northward. With the very dubious knowledge which exists of the periods of the winds, or of the changes of wet and dry weather, which prevail along the great continent, and the still less knowledge of the character of the shores, which will in some places delay, and in others rapidly accelerate your progress, it is impossible

to determine beforehand the extent of survey, either to the north or south, which you should perform in the alternate seasons. This division of your labours must be entrusted to your own zeal and prudence, but founded on the one leading principle, that on those parts of the coast which are uninhabited, where no ports or anchorages can ever invite the activity of commerce, and where bold and straight shores offer no difficulties or dangers to the passing navigator, there no precious time should be wasted, or minute accuracy employed, which would be as uninteresting to the geographer as useless to the seaman.

When obliged to stand far out to sea, in order to reach the remote divisions of the survey, you are to make that passage as useful as possible, by the selection of new ground, or by rapidly crossing the curves of magnetic variation, or by searching for some of the many islands or dangers with which different navigators have studded the Pacific ocean, and which in numerous cases will probably be found to originate in three or four erroneous positions having been given to the same spots.

On most parts of the coast you will be able to obtain fresh beef, flour, cocoa, and other victuals and refreshments; and if you should want a further supply of salt provisions or of stores, you should apply to the senior officer of the squadron on the western side of America, who will be directed to assist you.

You are to attend to the instructions and suggestions contained in a paper which has been drawn up under our directions by the hydrographer, and you are to supply a copy thereof to the lieutenant commanding the Starling.

You are to leave no opportunity of transmitting to

the hydrographer detailed accounts of the progress of the survey, as well as tracings of any part of the coast which may be completed. On every occasion which may offer, you are to address a brief report of your proceedings to our Secretary for our information, and at the expiration of three years passed in the execution of the above survey, you are, after communicating with the senior officer, to call at Valparaiso, and by rounding Cape Horn, to repair to Spithead, reporting your arrival and proceedings.

You are to prepare a berth for the botanical collector for plants and seeds for his Majesty's garden at Kew, who is to be borne on the book of the Sulphur for victuals only, and who will mess with the warrant officers; you will furnish him with the means of landing on such parts of the coast of the shores you may visit, to make his collection, when it will not interfere with the survey.

Should anything fatal happen to you on this side of America, the officer next in command is hereby required and directed to return with the Sulphur and Starling to Spithead, calling at Rio Janeiro, if already passed that place.

If that unfortunate event should happen to you on the western side of America, and during the first year, the officer next in command is to continue until the end of that fair weather season, on the work which may have been commenced, and then to return as above.

But should it occur after the vessels have begun their operations in the northern hemisphere, it may be presumed that the officer next in command will have acquired a sufficient acquaintance with your views to proceed with the remainder of the survey on his own

resources, and he is hereby required and directed to carry these orders into execution accordingly.

Given, &c., 21st Dec. 1835.

(Signed) C. Adams.
Geo. Elliot.

To F, N. Beechey, Esq.,
Subsequently Commander E. Belcher,
Captain of his Majesty's surveying vessel
Sulphur at Spithead,
By, &c.
(Signed) C. Wood.

N.B. While the Sulphur and Starling are within the limits of the South American Station you are to consider yourself under the command of Rear-Admiral Sir G. E. Hammond, the commander-in-chief on that station.

By the Commissioners for executing the office of Lord High Admiral of the United Kingdom of Great Britain and Ireland, &c.

Whereas we think fit that you shall be employed in superintending the survey of the coasts of the Pacific, and having ordered a passage for you in the Echo steam-vessel, to the West Indies, you are hereby required and directed to repair to Chagres, and there learning from his Majesty's consul the best way of crossing the isthmus, you will proceed to Panama, in order to assume the command of his Majesty's surveying vessel "Sulphur," and to take his Majesty's surveying vessel "Starling" under your orders.

Before you quit Chagres, you will make such arrange-

ments as will prevent any loss of time in firing the rockets for determining the meridian distance across the isthmus.

This object having been effected, or found to be impracticable without serious delay, you are hereby required and directed to proceed forthwith to carry into execution our orders formerly given to your predecessor Captain Beechey, as well as the instructions of our hydrographer, which were framed under our directions; copies of both of which papers are herewith inclosed for your information and guidance.

But as it appears that Captain Fitz-Roy has continued the survey of the western coast of South America, from the termination of Captain King's Survey at the peninsula of Tres Montes as far as the Gulf of Guayaquil, you are to consider as executed so much of our orders to Captain Beechey; excepting such further details in that interval of coast as you may be directed to obtain in the additional instructions addressed to you by our hydrographer, which are herewith transmitted.

Given under our hands, the 16th of November, 1836.

MINTO.

CHAS. ADAMS.

To Commander Edward Belcher,
Appointed to command
His Majesty's surveying vessel Sulphur.

By command of their Lordships.

JOHN BARROW.

NARRATIVE

OF

A VOYAGE ROUND THE WORLD.

CHAPTER I.

Her Majesty's ship Sulphur quits England—Captain Beechey invalided—Is succeeded by Acting-Commander Kellett, who repairs to Panama to await instructions—Captain Belcher appointed to the command of the Expedition—Quits Falmouth in her Majesty's steamer Echo—Touches at Lisbon, and reaches Barbadoes and Jamaica—Is transferred to her Majesty's ship Forte, Commodore Pell, and thence to her Majesty's ship Madagascar, Commodore Sir J. Peyton—Is present at the blockade, &c., of Carthagena, and then embarks in her Majesty's ship Nimrod for Chagres—Passage up the river—Reaches Panama, and takes command of the Sulphur.

VOYAGE

ROUND THE WORLD.

CHAPTER I.

On the 25th of September, 1835, her Majesty's ship Sulphur, three hundred and eighty tons, previously fitted for a surveying vessel, was commissioned by Captain Beechey as a sixth rate, with a complement of 109 men. Her Majesty's schooner Starling, one hundred and nine tons, fitted as a tender, was likewise commissioned by Lieutenant H. Kellett, both vessels being intended for carrying on the survey of the Pacific, from Valparaiso to 60° 30′ N.

On the 24th December they quitted Plymouth, and touching at Madeira January 7th, 1836, Teneriffe 13th, Rio de Janeiro February 19th, St. Catherine's February 28th, Monte Video April 6th, reached Valparaiso, the first port within the limits of their survey, on June 9th.

At this port Captain Beechey, whose health had

for some time been suffering, found that his constitution was too much shattered to allow of his continuing the command, subject to such changes of climate as it would necessarily entail; and therefore, having been invalided, he returned to England in her Majesty's ship, North Star.

Lieutenant Kellett, of the Starling, was then appointed acting commander of the Sulphur, and Lieutenant Dashwood, first of the Sulphur, to the command of the Starling.

The vessels then proceeded to Callao August 7th, Paita August 21st, Guayaquil 24th, Gorgona January 11th, 1837, and finally reached Panama on January 29th, where they had been directed to await further instructions from England.

On the Lords of the Admiralty receiving notice of the return of Captain Beechey, their Lordships thought fit to entrust me with the command. I was at that time employed in Lancashire, surveying its coasts; but was merely performing that duty until another steamer could be provided, to enable me to resume my proper command of the Irish Sea survey. On the 10th November, 1836, I received my appointment to her Majesty's ship Sulphur, and a passage having been ordered for me in her Majesty's steamer Echo, I proceeded in her to Portsmouth, where I had to complete some magnetic experiments, and thence to Falmouth, where the illness of Lieutenant Reid, commander of the Echo, caused some little delay. This was perhaps fortunate, as a very

severe hurricane, which caused much damage to houses, trees, chimneys, &c., occurred the day previous to our departure. My detention here was also productive of much satisfaction and benefit, by the access it afforded me to books, and the introduction to scientific friends, particularly to Mr. James Were Fox, a gentleman already well known to the scientific world.

On the 30th we quitted Falmouth, having on board despatches to deliver at Lisbon, where we were also to fill up our coal.

Here we were detained by the perverseness of our engineer, and by other trivial matters, over which, until the commanders of steam vessels are better informed on scientific subjects, they will have no control.

On the 27th December we quitted Lisbon, blindly steaming at full coal, in spite of every remonstrance, expecting to reach the trade limit before it could be expended. On the last day, at the last four hours' coal, I succeeded in persuading the commander to try one boiler with half fuel, and he then found that the difference was eight knots at full expenditure, and six and a half with half. We *did not* reach the trade limit, and we were left at the mercy of strong breezes from N.W. to S.W. for nine days, making but trifling progress.

On January 1st a calm succeeded, and I caused a current bottle to be put over, which reached Half-moon Bay on the island of Antigua on the 16th July

following; having travelled during this interval, nearly west, 1440 miles, or at the rate of 7·4 per diem.

To our chagrin, the westerly breezes revisited us, and unfortunately, instead of standing southerly where smooth water and the trade might be hoped for, we kept attempting to work westerly.

On January 2nd we experienced a favourable flaw, by which we were compelled to make southing, and at length secured the steady trade wind.

Sunday, 8th.—Being seven hundred and sixty-five miles from Barbadoes, another current bottle was put over. On the evening of the 13th, we shipped the paddle floats, got the steam up, and at daylight on the 14th made the island of Barbadoes.

At eight we passed her Majesty's ship Melville, bearing the flag of Vice-Admiral Sir P. Halkett, Belvidera, Captain Strong, and Racehorse, Sir E. Home.

Having delivered to the Admiral a letter from the Admiralty respecting my movements, I was directed to proceed on immediately to Jamaica, and if no ship of war was there, to proceed on in the steamer to Chagres.

I was fortunate in finding all the commanders old friends, and from my good messmate, Sir E. Home, received much valuable information, as well as hints to guide me in my future movements at Chagres, at that period not quite so well known.

In the evening we again started for Jamaica, having taken on board Mr. Sturge of the Society of

Friends, a gentleman engaged in the examination into slave affairs.

On the morning of the 22nd we reached Port Royal, and just as we were letting the steam off and about to anchor, I was informed that a large ship seen outside was her Majesty's ship Forte, Commodore Pell, bound to Carthagena. I directed the commander to proceed after her immediately, and it being calm, very soon had the pleasure of waiting on Commodore O. Pell, who took me under his immediate protection as an old friend of my father's; the steamer was then released for packet duty.

I now learned, that as war, or rather a close blockade of the ports of New Granada, had been proclaimed by Commodore Sir J. Peyton, under present circumstances it would have been unsafe to proceed to Panama *viâ* Chagres, and therefore remained quietly the guest of my kind friend, Commodore, (now Sir O. Pell).

The cause of this rupture is already well known: I shall therefore merely observe that until the terms sent out by Lord Palmerston were fully acceded to, I saw but little chance of reaching my ship, which caused me some uneasiness; fearing that the acting commander of the Sulphur, on finding that the state of affairs precluded the chance of communication would move away to survey some other port until amicable relations were restored.

On the 25th we arrived off Carthagena, where we found her Majesty's ship Madagascar, bearing

the pendant of Commodore Sir J. Peyton, with the rest of the West Indian and North American squadron blockading the port.

I was then transferred to the Madagascar, Sir John Peyton very kindly following up the attentions I had experienced from my friend Commodore Pell, who shortly after quitted us to return to Jamaica.

In order to obtain as much information as our position would afford, I volunteered to examine the bay and passage to the Passo Cavallos, and became the guest of Captain Warren of the Serpent, who was ordered to intercept supplies destined for Carthagena by that channel.

Whilst employed on this service, one of Captain Warren's crew was unfortunately shot by a person concealed amongst the bushes; and the same evening a boat belonging to the Government reached us with orders to return. Having with me the Commodore's barge and crew, I immediately determined, as we were informed that hostilities had ceased, on making a short cut through the Pass, the pilot offering no opposition. I thus obtained some insight into this channel, which I afterwards found was not opened to foreigners.

By a small steamer it could easily be passed; but the width, barely sufficient for the oars of the barge, would render it a rash step in uncovered boats, the trees, which are well cleared for ten yards or more back, affording ample shelter for musketry.

On reaching the port, I found the Madagascar

and other ships moored within. General Lopez, having received from Bogota the fullest powers to treat definitively, had consented to the demands in full; the greatest obstacle, the production of the money, being overcome, that night five thousand dollars were lodged on board the Madagascar.

The Nimrod, just arrived from Chagres, had brought Mr. Russell, the cause of the late rupture; he had been released by order of the Government. It also brought the lamentable news of the decease of the new consul, Mr. Turner, from a sudden attack of inflammation of the stomach.

The Nimrod was then ordered to convey me to Chagres, together with an officer from the Madagascar, to seal the papers of the late consul, and bring back the widow and daughters of the deceased.

Supernumeraries are nuisances in all ships, under any circumstances, and are apt to *feel* more than they can well express: but I must candidly confess, for myself, that from the moment I put my foot on board the Forte, to that of quitting the Nimrod, the kindness and attention I met with from their several warm-hearted commanders will ever be remembered with pleasure.

After a smart passage the Nimrod anchored off Chagres on February 7th, and Captain Fraser and myself landed, and communicated to the governor (La Barriere) the very agreeable intelligence that hostilities had terminated. I say agreeable, because, although his bearing bespoke him an ardent character, he had still

the good sense to see that the war must injure his adopted country, (being a Frenchman,) and he was anxious to return to his family, which he had left at his estate in Chiriqui.

The cessation of hostilities, however, appeared agreeable to all classes; although it is an undoubted fact, that but a few weeks before, the people of this part of the State of New Grenada were most virulent against Great Britain, as being more immediately connected with, and under the control of, the governor of Panama. Much bravado and boasting had been exhibited, but the pseudo warriors vanished with the calumet of peace.

We were very cordially received by La Barriere, who is a person superior to such an insignificant command. Our baggage was landed, and before dark restowed in a *bongo** calculated to carry seventy bales, (of one hundred and twenty pounds each,) fitted with arched thatch abaft, and capable of accommodating six passengers.

As previous travellers have not sufficiently dwelt on the details of the conveniences which may be obtained for transit of despatches, passengers, baggage, cargoes, &c., from Chagres across the isthmus, by land as well as by water, I trust I shall not be deemed tedious by detailing all that may positively be ensured.

* A canoe hollowed out from a single tree, generally a species of cedar; frequently from eighty to ninety feet in length, by eight feet width at the stern.

Canoes of the tonnage of seventy bales and under, to proceed to Gorgona or Cruces, are to be obtained at the rate of ten to eighty-five dollars; during the *freshes*, or rainy season, something higher.

A despatch to Panama, *express*, with the reply, should be seventeen dollars; time, seventy-two hours at longest. A *small* canoe with two persons and a change (of luggage), may get to Gorgona in sixteen or eighteen hours, and on to Panama in nine hours, if daylight favours; but this can only be performed by an European; the common *proprio* will take his time. The cost is ten or fifteen dollars.

The "rapids," or dangers of grounding, are mere bugbears. In large or heavily-laden canoes much delay or stoppage may arise during the dry season; but even with our heavy cargo, and the present dry period, we were not delayed more than five hours.

No danger exists in point of highway or sea robbery. The people, generally, may be trusted with large sums of money. Part of my baggage was missing for eight or ten days, but without apprehension on the part of the residents at Panama, who affirmed "*that it must be safe.*" And so it proved,—having been delayed by the breaking down of the *mules*. It was eventually borne on the *heads of men: one package weighed one hundred and seventy-six pounds.*

As our passage was not to commence until dawn, we took up our quarters in a house provided by an Englishman, with the intention of enjoying a pre-

liminary nap, the last we expected on this side of Panama. In this, however, we were disappointed, as the whole village assembled nearly beneath our windows, and maintained a constant succession of native songs and dancing, accompanied by very discordant music, until dawn, when they dispersed, and we embarked, in all seven persons—the lieutenant of the Madagascar, the purser, mate, and my steward, of the Sulphur, assistant-surgeon, and lieutenant of the Nimrod, and myself.

We quitted the bank, and notwithstanding our ill-founded suspicions, very soon enjoyed a most comfortable nap under our awning, formed by a thatch of palm leaves, covered finally by a painted canvass.

Our crew consisted of the padron and five rowers, their rate of pay on these occasions being five reals each, or two shillings and sixpence per diem. Although the cost of this canoe up was eighty-five dollars, the return charge, waiting twenty-four hours, was only ten. Any delay beyond twenty-four hours entails a charge of five reals a day per man.

Our journey commenced at rather a slow rate. The men, perhaps, had not lately worked together, or, possibly, were fatigued by their dancing exertions of the previous night. They were inclined, I thought, to exhibit an independence; in fact, they would move only at their own convenience; and of this we shortly had a specimen. On our arrival at Gatun, about eleven miles from Chagres, we stopped to allow the crew time to dine. Unfortunately their

wives resided here, and having already received part of their pay in advance, it was not without much difficulty, and by the exertion of the padron, that we succeeded in getting away at all, and much sulkiness and ill-humour were exhibited by one of the crew during the remainder of our voyage.

About three P. M. we moved on, and at sunset came to for the night at a sandy beach, where our crew recommenced their culinary operations.

They had provided themselves with rice and ripe cocoa-nuts at Chagres. The cocoa-nut having been grated finely, by one of Nature's provisions on the banks of the river, [the stem of a plant very closely studded with fine spines,] is put into an iron pot, mixed with a small portion of water, and boiled until it becomes milky. It is then strained by another of Dame Nature's utensils, viz. a sieve made of the Gorgonia flabellum, or Venus's fan, and the remains finally squeezed by hand. This milky fluid is boiled with the rice, and affords, with the addition of sugar and rice, a very palatable mess. I am told it is very delicious, and frequently given to children.

We were not without music this night; the frogs maintained their concert in imitation of our friends at Chagres. One of our party having inquired what caused the noise, and being answered serpo, a term applied to frogs here, thinking it meant a snake, was rather shy of the shore for the rest of the night.

At dawn the crew breakfasted, and we then re-

commenced our journey with more spirit. At this stage the oars were replaced by long poles shod with iron, similar to those used in our Thames punts. A platform consisting of a single plank on each side enabled them to walk about fifteen feet forwards, and with the pole to the shoulder walking aft maintained a rate equal to about two miles per hour against the stream.

Up to this point a ship's gig could come with ease, and, in case of necessity, I should think even to Gorgona. Here a canoe might be despatched over night, with fresh hands, in readiness to effect the utmost despatch. The gig probably would get thus far in half the time required by a canoe, and mostly under canvass.

Just above this position, at Palo Matea, poor Captain Foster, of her Majesty's ship Chanticleer, met his melancholy fate. The spot is not now marked, but a brass tablet rudely engraved, and but an insignificant monument, even for a seaman, still remains in Fort Lorenzo, to show how little is thought of the pet of science, when his services are no longer available.

Our progress this second day afforded us little change, save in the appearance of a few more alligators and iguanas. Some of the latter were taken by our crew, who displayed some tact in putting them in durance, although cruel—viz. by breaking the claw joints and passing one claw through the ligament of its opposite member,—*toggling* their hands over their necks, as a seaman would term it. The

eggs of the iguana are much esteemed; every house displays strings of them hung up to dry; the children eat them; after which, having filled them with air, they explode them by a blow of the hand, in mock contention, causing a very sharp report. They are similar to those of the tortoise or turtle, but in size not exceeding that of the pigeon.

A second night we passed in our canoe. The work of the following day became more tedious, owing to the dryness of the river, which frequently compelled us to land. On one occasion, our passage was for some time obstructed by a large tree, which had fallen across the stream at its most rapid point. Fortunately, in its fall it had broken away so much of the bank, which the stream, impeded in its former course, had forced a channel through, that we effected our passage by this new cut, after some little dexterity on the part of the boatmen, aided by our exertions.

It may readily be imagined, that with eight chronometers in the canoe, and depending on their performance, it was not the difficulties or other disagreeables of the voyage, which kept me continually in torment. In fact, every time the canoe touched anything more solid than water my senses were excited.

About sunset we got sight of Gorgona, and were shortly after housed for the night (excepting, however, for astronomical observations) in a habitation provided by the alcaldé.

Our baggage was landed by eight the following

morning, and it was intended that the party should have moved on immediately for Panama. But want of mules and previous arrangement detained them until noon, when the greater part had moved forward. My astronomical observations detained me until three, when Lieut. Bevan and myself mounted our steeds, intending to reach Panama that evening.

One of the mates was left behind in charge of three chronometers, to await my return for rocket operations, in order to complete the meridian distance between the Atlantic and Pacific, or between Chagres and Panama, where the tides have effect. A party from the Sulphur, which had been ordered to meet me here, having been, by the mistake of the guide, taken to Cruces, missed me entirely.

Shortly before sunset, having lost our guide, we fell into the wrong road, but eventually met with shelter for the night in a hut where nothing else could be obtained. In the morning, by the assistance of the peasant, our host, we were enabled to reach the main road, and about two that evening arrived at Panama, when we found that those who had preceded us had also been similarly unfortunate.

Our first efforts were directed to free ourselves from the garrapatas, or ticks, which infest the woods of this country, and we then proceeded to pay our respects to the widow and family of the late consul, whom we found residing at the house of Mr. Dawson, the only English merchant (although by birth a Russian,) resident here.

The Sulphur, on arriving, had ascertained the state of affairs, and finding it probable that they would not immediately be settled, her commander had deemed it prudent to avoid any chance of collision with any of the braggadocios, (who volunteered to capture her if necessary,) and therefore fixed on the island of Taboga, about twelve miles distant, where he had fixed his observatory.

As it became important that the distances should be measured from Panama, from whence the rockets might be seen, and as all our western operations were to hinge on this position, the Sulphur was ordered to repair to Panama, and the observatory was erected on the N.E. angle of the fortifications.

Instructions, in reply to notes forwarded to our various consuls from the foreign office, had already reached from Bogota, directing the several authorities to afford me every facility; and I now found that no impediment would have been offered, even had I arrived in the midst of the blockade. The instructions to the commandant at Chagres warranted this, and the facilities offered by the authorities at Panama fully evinced their disposition to second the views of the governor of Bogota.

CHAPTER II.

Assume the command of the Sulphur—Escort Consul's family to Chagres, and measure meridian-distance by chronometers—Embark the ladies in her Majesty's ship Nimrod, and re-measure distance to Gorgona—Another attempt with the rockets from Caraveli; unsuccessful; Explosion bags from tree on Ato. Ormigero; successful—Measure distance to Panama—Power of Moteros in carrying burdens—Opinion on rocket measurement compared with chronometer—Present state of Panama—Move to Taboga — Leave Taboga — Visit Baia Honda — Magnetic Island (Pueblo Nueva)—Pass Gulf of Nicoya—Papagayo gusts—Arrive at Realejo—Obtain supplies—Port of Realejo—Quit Realejo by the Barra Falsa—Repair to Libertad—Visit San Salvador—Return and hear of fatal accident to coxswain—Surf—Difficulty of getting to ship—Succeed, and quit Libertad—Touch at Manzanilla (Port of Colima)—Reach San Blas—Visit Tepic—Quit San Blas for Sandwich Islands.

CHAPTER II.

HAVING formally taken the command of the Sulphur, and replaced Lieutenant Kellett in the Starling, Lieutenant Dashwood was invalided, and several of the Sulphur's crew were discharged for passage to England.

The affairs of the late consul's family having been arranged, and the necessary preparations completed for their removal, I recommenced my journey to Gorgona with five pocket chronometers. We formed a complete escort for the ladies; and, arriving shortly before them at Gorgona, made all the necessary arrangements for such comfort as could be procured on their water excursion down to Chagres.

Accompanied by Lieutenant Collinson, who was already previously prepared for my immediate departure, we stepped into a light canoe at eight the same evening, but did not succeed in reaching Chagres before noon the day following. The original agreement for this canoe, down and to return, was six dollars; but our increased number induced

them to impose; therefore rather than lose an instant I was glad to hear the paddles in motion at the price of ten.

About dawn the ensuing morning, the heavy canoes arrived, and as our repose had been disturbed, in the same manner as on our former visit, we were fully prepared to receive our fair travellers, for whom we had prepared coffee and other requisites by the aid of our kind friend Captain Fraser,—their meeting with whom was a melancholy one, as about one year before he had landed them, in the bloom of health and enjoyment, at this very spot.

At eight, we took our leave of them, they embarking in the Nimrod, and we proceeding to our professional toils, under a broiling sun, on the ramparts of San Lorenzo.

We had arranged to return at two to Gorgona, but our crew had been tampered with, were intoxicated, and it was merely by giving way to all their absurd demands for increase of pay that we eventually departed at dark.

At ten on the 20th, we reached Gorgona, and tried a second set of rockets on Mount Caraveli, but being of faulty construction they failed, bursting the instant they were fired, without ascent.

A second station, by bags of powder exploded from a high tree on Ato. Ormigero, succeeded.

On the following morning we commenced our journey to Panama, the heavy chronometers being packed in a basket of hay, with the pocket watches

above them; the whole secured on the head and back of a light-footed *Motero*.

Some of these men carry enormous burthens; I have already mentioned one case weighing one hundred and seventy-six pounds, brought on the head. It was in this manner, in a chair with the back secured to the head, and the hind legs supported by stirrups to the shoulders, that the Padres travelled in central America and the Equador. It is not improbable that some of these individuals exceeded the above weight.

On my arrival at Panama I found the weather continued so very hazy, and the light of the moon interfered so much, that further operations were delayed until the termination of our survey of the bay, when another attempt was made from Ato. Ormigero to connect Gorgona with Panama by explosion bags.

No one could have felt a greater interest than myself in these operations, and provided I could have been the actor, endued with ubiquity, very possibly I might have been better satisfied with the results. But I have long acted in conjunction with others, and I recollect only two or three instances where comparisons obtained by simultaneous signals from ship to shore, *and within three miles*, have been satisfactory. I know this from possessing two first-rate pocket chronometers, whose differences could not exceed 0′,4″, but which nevertheless exhibited as much as two seconds error

City of Panama from the Sea.

in comparisons thus taken. I have frequently taken a set of comparisons with our whole force of chronometers immediately after an assistant, and found errors of five-tenths or more. I am therefore perfectly satisfied that good pocket watches, previously *rated* at the extreme positions, are more worthy of confidence than explosion of rockets. We seldom find two observers note the flash of a gun in perfect accordance, even at three miles.

Panama was formerly a place of some note, but shortly after the visit of Ulloa, about a century ago, may be said to have arrived at its zenith. The remains of the buildings evince wealth, and afford some idea of the extent to which they hoped to carry their improvements. But they are now fast falling into decay. The port is seldom visited by vessels of any size, and the fortifications, which originally were admirably constructed, are rapidly following the fate of the houses.

The population is chiefly a mixed race: few Spaniards are to be found. One Englishman, and the American consular agent, comprise all the society we met. This doubtless will change the instant the steam navigation is in force. Inns and lodging-houses must then arise for the accommodation of those pursuing this route.

There is every facility for erecting a substantial pier, and improving the inner anchorage, which must follow the arrival of the steamers, unless they still

submit to the miserable landing at the sea-port gate, which is as filthy as it is inconvenient.

Of the governor we saw nothing, except officially. I made the acquaintance of General Herran, with whom I was much pleased. He has been at the British court, and was a friend of the late Admiral Fleming. I am indebted to him for his influence in preserving order at our quarters on the lines.

Panama affords the usual supplies which are to be obtained in these tropical regions, and at moderate prices, but vessels wishing to procure water, bullocks, &c., can obtain them more readily at the island of Taboga.

Having completed our operations at Panama, as well as the survey of the immediate neighbourhood, the Sulphur was moved to the anchorage at Taboga, where she remained completing water and the necessary arrangements for the run up the coast. On quitting Panama, our chronometric force was twenty-two; of these seventeen were trustworthy.

On the 15th March, we quitted Taboga, and pursued our voyage along the coast, with the Starling in company. On being becalmed off a deep indentation of the coast, which appeared to be the mouth of a river, I left in my gig, in order to fix one of its points, directing the ship to follow in should the breeze permit, and the signal for depth be made. About noon she was anchored in what we found to be Baia Honda, and about four P.M. our operations

having been completed, we again put to sea in our route to Realejo.

As the 21st March was at hand, I determined on selecting the first eligible spot for making our first suite of quarterly observations, and on the evening of the 20th was fortunate enough to find safe landing on a very convenient island off the mouth of the river leading to Pueblo Nueva.

As these observations were principally magnetic, this island received the name of Magnetic Island. No natives who could afford us any information presented themselves; and all we succeeded in eliciting, was that Pueblo Nueva was situated some distance up the river, of which a very partial survey was at that time made.

Our operations here having been completed, we moved on for Realejo. On the 28th, passed the Island of Cano, and on the 29th, between it and the main, found ourselves at daylight, off the mouth of a large inlet, which we had not time to examine; the current setting strong to the eastward; the weather very hazy, followed by thunder, lightning, and rain.

On the morning of the 30th, we passed the Gulf of Nicoya, and close to the island termed Cape Blanco, at its western point. Here we found ourselves obstructed by a point off which the breakers and rocky ledges above water, extended a considerable distance to seaward. The soundings were regular from twenty-five to eleven, and eight and a half fathoms, hard sand, in which latter depth we tacked

successively within a mile and a half of the shore surf, and an outer roller about half a mile from us on the last tack. The weather during the whole day was thick and hazy over the land, followed at nightfall by thunder, lightning, and rain.

These symptoms of the approach of the bad season rendered me doubly anxious to get to the northward, as our crew were not at this period in the best condition, and the moist heat we experienced was very oppressive.

At daylight the weather hazy, and Cape Blanco still in sight. A short distance to the westward we observed a sandy sloping bluff, off which a shelf, apparently composed of sand, with conical studded rocks, extended a considerable distance to seaward. On a sandy islet near the bluff, two very remarkable ears jutting up, off which we tacked in thirteen and a half fathoms, sand.

On the 2nd, atmosphere hazy, breeze freshened considerably, which on the 3rd reduced us to double reefs, gradually decreasing towards daylight, when the Volcan de Leon, as well as that of Viego, were plainly seen, and. particularly well defined. These strong breezes just at the point we met them, viz. off the Punta Santa Catalina, are the prevailing gusts termed Papagayos, which blow with great force out of that Gulf, and frequently cause the loss of spars. Many fish of large size were seen, and several dolphin caught.

At noon we had reached Point Desolada—a most

appropriate name certainly; it seems almost in mockery that one or two stunted shrubs are allowed to stand on its summit—objects at all times of interest to us.

We failed in reaching Realejo before dark, and not knowing its dangers, preferred standing off and on during the night, in preference to the being rocked to sleep by anchoring in the heavy ground swell, or lulled by the roaring of the surf, at all times particularly loud on this coast. The sailing remarks will be found in the appendix.

At eight the following morning we anchored about a mile from the western end of Cardon, where, on landing, I found a mark probably left by the Conway when she examined this place a few years back.

The Island of Cardon is of volcanic origin, and the beach contains so much iron, that the sand, which probably is washed up, caused the magnetic needle to vibrate 21° from zero. I do not, however, believe that the needle was much, if at all, affected on the summit of the island, where our observations were conducted. Our position was on its new cliffy angle. The boats having examined and found the anchorage safe, the Sulphur was brought in and anchored within the Island of Aserradores, in perfectly still water, four fathoms mud.

On the Island of Aserradores our tide gauge was established, being free from undulation, although directly open to seaward through Barra Falsa; and

we were fortunate enough to find a good well of fresh water close to the beach.

The principal object of my visit at this moment was to complete our supplies of sugar and rum, which we had been informed by our naval friends were good and reasonable, and, moreover, the produce of a farm belonging to one of our countrymen, Mr. Bridge.

In this we were rightly informed, and the purser was immediately despatched to make the necessary purchases, as well as bullocks, and other necessaries.

Trusting to the accounts I had read of the magnificence of this port, I had fully intended placing the ship near the town. The visit of the captain of the port soon undeceived me. He assured me that at low water not more than three feet would be found near the town, and so narrow, that there was barely room for the oars of my gig, and then only by careful steerage. Indeed, I found that although the ship might be warped two miles higher up, she would there be entirely shut from any breeze, her yards probably locked in the trees, and swarming with mosquitoes. I deem these remarks particularly called for, as the accounts given in the Modern Traveller may otherwise mislead.

This port, if a settlement were established on the islands of Aserradores, Cardon, or Castanon, would probably be more frequented; but the distance from the position where vessels usually anchor (within Cardon) to Realejo, is a sad drawback to vessels

touching merely for supplies. Rum is also too cheap and too great a temptation for the seamen. Supplies of poultry, fruit, bullocks, grain, &c, are, however, very reasonable, and of very superior quality; turkeys are said to attain an incredible weight; they still, however, justly maintain a very high reputation.

At the period of our visit, a young American had imported machinery for a cotton mill, and had also advanced funds to a family of Leon for the cultivation of the cotton plant on the island of Aserradores. But although the house on the island was in progress, and the machinery erected between Realejo and San Antonio, I much doubt the success of either speculation. Cotton thrives well in the interior, but not on Mangrove islands such as Aserradores, and the plan of the mill power I much question.

These people also are too indolent for the successful pursuit of anything which requires perseverance. They are attracted for the time by the novelty, and rave on the idea of the fortunes they are to make, but one unlucky accident overthrows all their hopes and stability.

The present village of Realejo (for the name of Town cannot be applied to such a collection of hovels) contains one main street about two hundred yards in length, with three or four cross openings, leading to the isolated cottages in the back lanes of huts.

With the exception of the houses occupied by the

commandant, our Vice-consul, Mr. Forster, administrador of customs, and one or two others, there is not a decent house in the place. The ruins of a well-constructed church attest its former respectability; but the place is now little more than a collection of huts.

The inhabitants generally present a most unhealthy appearance, and there is scarcely a cottage without some diseased or sickly-hued person to be seen.

Our botanical collector proceeded to Leon, in order to make the most of his time. The purser and surgeon visited the sugar establishment of Mr. Bridges at San Antonio, but the duties of the survey detained me at the ship.

About a mile below the town the ruins of an old but well built fort, with three embrasures, are yet to be traced, and between it and the town are the floor timbers of a brig, which ventured up to grave, but fell to pieces before she was taken in hand. Vessels of 100 tons have grounded at the pier of Realejo Custom-house, but above that they would be left dry at low water.

Mr. Forster, the Vice-consul, happened to be on a visit to Grenada during our visit; we therefore had not the pleasure of becoming acquainted with him.

On the 10th the Starling rejoined us, and our observations and interior survey being complete, we moved to the outer anchorage, to finish the external parts of our plan.

On the 12th the Starling was despatched to Libertad in order to make the necessary arrangements for obtaining time there, at the instant of our arrival, as well as to make enquiries, and provide for our visit to San Salvador, where our Consul-general, Mr. Chatfield, resided.

Realejo is the only port after quitting Panama where British residents can be found, or supplies conveniently obtained. Water of the finest quality is obtained from a powerful stream, into which the boat can be brought and the casks filled by baling, alongside of a small wall raised to cause a higher level. Here the women resort to wash, but by due notice to the Alcalde, this is prevented. A guide is necessary on the first visit, after entering the creek which leads to it, and which should only be entered at half flood; it is necessary to pole the remainder, the channel not having sufficient width for oars.

The water from the well on the island of Aseradores is good, but I have a great objection to water infiltrated through marine sand and decayed vegetable matter, and consider the chances of sickness one step removed by obtaining it from a running stream.

The mountains in the neighbourhood of Realejo are magnificent, particularly to the spectator at twelve or fifteen miles off shore; but as they will be subsequently noticed, as well as the Estero Doña Paula, which leads up to Leon, I shall not advert to them further at present.

On the 13th of April, we quitted Realejo, and aided by land and sea breezes, reached the anchorage off Libertad, on the 15th, by eight A. M. Here I found my good friend Kellett had fully met my wishes, and after breakfast, the surf being then moderate, we risked our persons, not however without a wetting, and gained the Custom house on the beach, which is little better than a mud hut, with a small cabin at one end for the officer. Here we were detained waiting for mules until two P. M., and without any respectable place of shelter, and nothing to amuse us, or even to kill time. This delay became doubly annoying as it would prevent our reaching San Salvador before dark. We mounted our mules, however, which seemed to promise us some little vexation from their miserable condition, and, accompanied by Kellett, set off for San Salvador. The mules, which were before blown in the exertions to evade their pursuers, and much worried by innumerable horse flies, which caused the blood at times to roll freely down their faces, could neither be persuaded nor compelled to move at a faster than *cargo rate*, little exceeding a walk.

The road is through a very mountainous tract, and for the first five miles the great effort is made to ascend by a bridle road, little better than a goat path, or very similar to the roads between Gorgona and Panama. On reaching the highest pitch from whence we could observe the sea, the scenery grew more interesting, and as the sun declined it became beautiful. At

this season too every thing appeared to disadvantage, the atmosphere being hazy, and the vegetation parched; they were also burning the trees, &c., to clear and manure, and the temperature was sultry in the extreme.

About seven we reached the village of Hojia, but hardly had we made our calculations on reaching the city of San Salvador, at nine, when the sound of thunder and the appearance of heavy black clouds caused us to pause. Our guide also made his preparations for the coming storm with so much determination, by unsaddling and packing our baggage under the centre of an open horse-shed, that it was received by us as a signal for no further remonstrance.

Thunder, lightning, and rain we had in profusion. But there are few evils without some trifling loophole through which comfort may be derived, or at all events imagined, by those in the humour to make the best of all disasters. The change of temperature was a great relief, and we consoled ourselves by looking forward to the enjoyments of a cool ride when the clouds should have passed. The only shelter we had was shared with our mules; and, perched on our respective saddles and baggage, aided by Indian corn leaves, we were glad to sup on a couple of eggs, and a plaintain each, not having touched food since six A.M.

After enjoying sundry naps in every imaginable position, interrupted by the encroachment of a leak at one time, or the too near approach of the nose of

a mule at another, we arose at midnight, resaddled the beasts, and with a clear sky resumed our journey.

At two we entered the city of San Salvador, and were misdirected by the guard to the house of the French Consul, who was not a little surprised at such an unexpected visit. He was, however, excessively civil, offered us accommodation, and finally sent his servant to conduct us to the house of our Consul-general, Mr. Chatfield, who turned out with much good-humour, provided refreshments, and having chatted away the interval employed in preparing our beds, we finally enjoyed an uninterrupted repose in civilized style.

We were amused in the morning by the sound of martial music, and found a band of eight heroes very pompously attired, parading the street, but unaccompanied by troops. At ten they returned with the latter, in number about twenty; the master of the band, fancying himself at least a general, and using as many antics as a gander, leading forth his troop to the green. The whole number reminded one much of Liston's brave army in Bombastes Furioso.

The town is very prettily situated on a level plain or amphitheatre, from which several lofty mountains rise, that of the Volcano de San Salvador being the most conspicuous. The streets are broad, and very clean for a foreign town; the houses have very projecting eaves; they are substantial, although lightly constructed, and of one story only, in con-

sequence of the liability to frequent shocks of earthquake. They have internal courts, and appear to possess convenience, space, and comfort. All are well supplied with water by aqueducts; have a good market, every necessary being cheap, and abundant; and nothing is wanting to their comfort but society, and strictly enforced order. The want of this latter, I am informed, is a sad drawback; and it never can be attained under their present laws, habits, &c. One of these habits, arising from their new system of *Independence*, is entering your house, and seating themselves without invitation: any opposition might be attended by unpleasant results—even to assassination.

During the day we accompanied Mr. Chatfield to call on the President Morasan, an intelligent gentlemanly person, very much like the portrait of Bolivar, which at the time was suspended over his chair. We afterwards called to make our apologies to the French Consul, who, being from home, returned the call, and pressed us strongly to dine the day following, but as our return was imperative, we were obliged to decline the honour.

The temperature in the shade during our stay averaged 76°.

At six the next morning, we commenced our journey to Libertad. The weather was cool and pleasant, from the effects of the late rain. The country in the neighbourhood of the city appears to be in cultivation—apparently sugar-cane. Cattle

are abundant, and, although in a state of civil war, the toils of clearing the soil of wood, by fire and axe, are still in activity.

On reaching the highest point of the ridge, which commands the sea as well as the surrounding mountains, we had anticipated a grand treat, but the action of the sun on the recently saturated earth had clothed all in vapour.

At a stream, half the distance down, we stopped to take our luncheon, which we enjoyed under the shadow of an immense tree overhanging the stream. Our poor beasts, however, were grievously tormented by their enemies, the horse-flies, which caused them literally to flow with blood, but more particularly about the head and neck.

About two o'clock, as we neared the beach, I perceived Lieutenant Collinson awaiting my arrival. His presence on shore, backed by the expression of his countenance, foretold disaster; and I very shortly learned that my gig had been overwhelmed in the surf, and my coxswain drowned. This was a severe blow to me, as I had never before lost a man since I held a command.

On our arrival at the beach, I found no less than fourteen hands on shore, and not the slightest chance of passing the surf. We were compelled patiently to await the following dawn, at which moment the sea, owing to the land breeze blowing during the night, and until six in the morning, usually overcomes the impetus given by the sea breeze of the day.

By the statement of Lieutenant Collinson, I found that our misfortune was witnessed by the persons in power with the most perfect apathy; and of this I had ocular demonstration in a second mishap.

In the morning we succeeded in passing our whale-boat, which got out well. Kellett followed in his gig, but unfortunately got into a heavy roller, and for some minutes I was at a loss to ascertain who were saved, my attention being directed to Kellett. By great exertion I prevailed on one or two natives to assist the seamen, who, although not more than knee deep, were sinking from exhaustion, and would probably without aid have been carried back by the efflux. I was myself, although fresh, scarcely able to keep my footing, the boulders and sand falling back with such force on the efflux.

During this affair, the commandant stood mute, nor did those under his command offer the slightest assistance. However, their miserable appearance but too truly indicated their utter helplessness and imbecility.

We succeeded in recovering the gig, which was slightly stove, and as we could not get off for several days, we employed ourselves in preparing her for the next attempt.

Every scheme to effect a communication, by casks, rockets, &c., failed, and every attempt to take advantage of a lull proved abortive, although Kellett watched in the water, with the boat afloat, for some hours.

At length, on the morning of the 22 April, we succeeded in passing Kellett out in his gig by six A. M. We had no serviceable whale-boat remaining, and one of our gigs was therefore sent. She swamped in a heavy roller, but the officer, Mr. Speck, mate, and crew, having been selected for the duty and well prepared, swam in with the connecting line fast to our cutter, which was moored without the danger limit. They also succeeded in bringing in the boat, but bilged. A cask containing implements was then hauled in, into which the clothes and instruments were packed and sent off by the line to the cutter. Having repaired our boat rapidly, we made an attempt, and fortunately passed without a spray.

The body of the coxswain was not found, although the shores were searched daily. It is probable that he was taken by the sharks, as he was a light hand and expert swimmer.

" Port of Libertad." One would naturally expect from this title that something pretending to a bay, or deep indentation at least, would have warranted the appellation. But a straight sandy beach, between two slightly projecting ledges of rock about one mile asunder, forms the *playa* of Libertad: it is *law* and *interest* only that have made it *a port.*

At times the bay is smooth, but the substratum at the beach being of large smooth boulders of compact basalt, the instant the surf rises they are freed from their sandy covering, and a dangerous *moving*

stony bottom left, on which the boat grounded. We were informed that it is generally violent for three or four days at full and change, which corresponded to the time of our visits.

The village contains about twelve huts, with a family of about six in each. There is also a long government building constructed of adobes, in which the tackle of the bongos used for landing cargoes is usually stored; and a cabin for the commandant at its extremity served for parlour, bedroom, kitchen, &c. The only pet birds were fighting cocks perched under the chairs, or probably tethered in the corners. Cockfighting is a complete passion in Spanish America.

This is all that can be hoped for at Libertad.

The rollers which set in on this beach curl and break at times in four or five fathoms, at least a quarter of a mile off. Those within, which are the most dangerous, are caused by the offset or efflux.

The sand beach is composed chiefly of magnetic iron sand, the dried superstratum, about one inch in thickness, caking in flakes free from admixture.

The anchorage is uneasy, and, I should think, unsafe, and should be avoided near the full moon. Sudden rollers come in, which are apt to snap chain cables, unless with a long range.

Poultry, bullocks, &c., are to be obtained, but compared with those of San Salvador or Realejo, the prices are exorbitant. Bullocks can only be embarked in one of their bongos.

On the 22nd we quitted our anchorage, intending to make the shortest passage to San Blas. By the advice of several old traders, I stood to sea in order to reach the trades, as the inshore passage is not only tedious, but subject to strong gales in opening the Gulf of Tehuantepec.

We experienced a very heavy swell from the north, succeeded by strong breezes, and parted company from the Starling during the night—the ship very wet and uneasy.

Crossed the track of the Blossom; compared observations for magnetic declination : observer in both cases, E. B.

8° 54. Blossom, 1827. 8° 0. Sulphur, 1837.	}	Mean of three days.

That given in Bauza's chart 10½, is probably an error of the engraver.

Fish were numerous—among them many flat fish similar to the old wife; but until cooked, I was not aware they had been taken, otherwise specimens would have been preserved, as the caudal, dorsal, and anal fins were uncommon.

Having crossed the limits usually assigned for the trade, and outside of the Blossom's track, I gave up all further idea of making more westing, and in 12° 30′ N. long. 102° 40′ W. stretched in for the land, our water being short, and trusting to Acapulco being on our lee in the event of distress.

On the 12th May we made the land about three

hundred miles eastward of Cape Corrientes. Continued to ply close in shore, taking advantage of land and sea breezes—the latter never holding longer than six hours—viz. coming in about ten and ceasing at four. Current strong, easterly. The land breezes, *when close in shore*, helped us from eleven P.M. until eight A.M., but were never sufficiently strong to impel us beyond three knots, —seldom two.

On the morning of the 14th, saw the Starling about ten miles to the E. S. E.; kept sight of her from the mast head until the evening of the 19th, when she again parted.

On the evening of the 17th, when tacking very close in, apparently at the mouth of a large river or estuary, observed a vast crowd of men, women, and children, waving to us. This, we afterwards found, was some superstitious ablution which had collected thousands from the interior. I have witnessed a very similar exhibition at Lytham in Lancashire, in the month of August, at the highest spring tide.

On the evening of the 20th we anchored off Manzanilla, and dispatched a boat to seek for water. On her return, we learned that the Leonora barque, having some English amongst her crew, was at anchor inside, and that water might be obtained close to the beach. On the following morning, we beat in, and anchored in a snug berth in twelve fathoms. We determined the position; obtained

ten tons of water and one bullock; and at midnight were again en route.

The bay is small, but safe, anchorage good, water brackish. There are no houses,—men and families living exposed under the trees, and had not the Leonora been there, it is probable that we should not have met a soul.

This port is the main sea communication with the city of Colima, thirty leagues, or eighteen hours travel from hence, and containing a population of thirty-eight thousand.

The following was kindly furnished by a friend, who at the moment was on business at Colima.

"This port has a good anchorage, and is well protected against the southerly winds prevalent during the rainy reason, but, on account of a very considerable lake of stagnant water in its immediate neighbourhood, is very unhealthy during the summer. Infested by myriads of mosquitoes and sand flies, even in the dry season, it is nearly impossible to reside there.

"This port has been open to foreign commerce for several years, but has not been able to make much progress. The port itself has not a single house, and the first adjacent town is Colima, formerly the capital of the territory bearing the same name, now embodied with the department of Michoacan.

"Colima, it is true, is a large town, of considerable

consumption, containing about thirty thousand inhabitants; but the distance from the port (thirty leagues) and the difficulty of communication, the roads being passable in the dry season only, naturally augment the expenses on any mercantile transaction, to such a degree that it scarcely pays—as any cargo which could be introduced, would be merely to supply the district of Colima. Such drawbacks, added to the detention, deter vessels from touching at Manzanilla.

"Another cause which must divert the maritime trade from Colima and Manzanilla, is the preferable market at the capital of Guadalaxara, for its produce of sugar, maize, coffee, cocoa, indigo, &c.; and as these articles are not eligible for exportation, on account of the high cost prices, the foreign merchant could only deal in cash payments, whilst Guadalaxara, which is generally overstocked with goods, via Tampico on the east, and San Blas on the west, can supply Colima with the necessary merchandize by barter.

"The articles saleable at Colima are linens, cotton goods, woollens, and a little hardware; but, as already stated, in small quantities, calculated perhaps for the the consumption of about ten to fifteen thousand souls."

The captain of the port had previously received full instructions to afford us every facility that the country could offer, and to repair to the beach on our

arrival. We found him here, but doubtless brought down by the supercargoes of the Leonora. He urged me strongly to wait until the following day, when the colonel commanding at Colima would call upon me. We quitted the port at dawn.

After a very tedious beat, we succeeded in reaching San Blas on the 27th, but did not gain our berth at the usual anchorage until the following morning, when we found the Starling had been here two days.

No prospect of provisions, and no dispatches.

On the receipt of a letter from my old friend Mr. Barron, our Vice-consul at Tepic, who held out hopes of finding provisions at Mazatlan, which had belonged to a whaler wrecked at Cape St. Lucas, I immediately despatched the Starling to purchase them, with directions to rejoin me off Isabel Island.

Having received a very pressing invitation to come to Tepic, where Mr. Barron was suffering in apprehension of a severe family affliction, and it being essentially necessary that we should arrange about letters, provisions, &c., I set off immediately, accompanied by my assistant-surgeon Mr. Hinds, and Messrs. Simpkinson and Nicholson, mids.

As we entered the town, Mr. Barron's favourite daughter, about eighteen, expired, and it was not for some days that I could communicate with him on service matters. I had already received an invitation from another friend Mr. Forbes, to make his house my resting place during my visit, (I was also his guest in 1828,) and foreseeing the gloominess of the

house of affliction, he had most kindly made arrangements for the accommodation of all our party.

The funeral, which took place the following day, was very splendid, and attended by all the rank and respectability of Tepic; indeed the loss appeared a public calamity; so entirely was the deceased the idol of this small community, every family seemed to participate in it; nor did they regain their spirits during our stay.

Having made the necessary observations for proving the longitude of Tepic, and completed my affairs with the Consul, we started for San Blas at half-past three the following morning, and reached the beach at four in the afternoon. Passing through the town of San Blas, it being my first visit since 1828, I was astonished at its utter desolation. It seemed like another Pompeii, or the tomb of a city, compared to what I had witnessed in 1828.

In the square, which at that period had every door open, not three human beings were to be seen; and on the market evening, (Saturday,) when I certainly expected to have found some little remnant of former gay scenes, not one hundredth of the numbers were assembled.

It is truly melancholy to witness such changes. I fear its fate is sealed, and nothing but a pile of ruins will mark this once gay spot, particularly as the main road now passes beneath the hill, and the houses at the beach have increased.

That same evening I took my departure, the ship

having weighed in the afternoon, and awaited me outside the Piedra de Tierra.

On the 10th June we passed the Isabel, when the Starling rejoined, having fortunately obtained part of the supplies for which she had been despatched.

CHAPTER III.

Search for islands in the neighbourhood of Socorro—Clouds and Freshwater Island—Pass over position of Best's Island—Make Clarion's—Search for islands reported by Whalers between 130° and 136° W.—Cross Blossom's track—Method of inserting track—Make Island of Maui—Singular cascades—Arrive at Oahu—Enter the port to refit—Question of forcible entry of "Clementine"—Appeal to the Government—Unsuccessful—Re-capture Clementine, and send her for the king—Missionary threat—Land the missionaries—Arrival of the French frigate Venus—Letter from the king—Arrival of the king's yacht—Royal reception—King consents to the missionaries remaining—Suspicions of foul play—Take leave of Venus, and quit Oahu—Arrival in the Bay of Atooi—Quit Hanalai—Present condition of Oahu—Views of the king—College at Maui—Starling despatched to Port Mulgrave—Touch at Rose Island—Arrive at Port Etches—Aurora observed—Visit the Russian settlement of Port Etches—Discover traces of Captain Portlock on Garden Island—Quit Port Etches—Extraordinary appearance of land near Cape Suckling—Anchor in Icy Bay under Mount Elias—Point Riou not to be found—Icebergs—Arrival at Port Mulgrave—Rejoin Starling—Lip ornament—Quit Port Mulgrave.

CHAPTER III.

Our course was now directed for the Sandwich Islands, where we were almost certain of completing our supplies. Baffling winds, with a heavy S.W. swell, prevented our clearing Cape San Lucas until the 14th, when we began to make pretty fair runs.

Sunday, June 19th, having reached the range of Socorro and Clarion Groups, several of which are doubtful, I despatched the Starling to seek for Fresh water and Clouds Islands, and rejoin us off Clarion.

My attention was directed to Clarion, Nublada, and Best Islands. The weather unfortunately was very unpropitious, preventing our obtaining astronomical observations.

Birds, principally gannet, together with broad patches of weed at times, plentiful.

On the 20th we found we had been drifted much to the southward of our reckoning; hauled up for Best's Island, and passed over its assumed position, at which time we could easily have discovered a breaker five, and land ten miles off. About six we made the east end of Clarion Island, distant about fifteen miles;

and by eight its bearing, due north, proved that its position in longitude is not far from correct.

The Starling was now directed to pursue a course so as to enter on the 130° meridian in latitude 17° N. I bore up to preserve a parallel course to her, and enter at 16° 30′ N., at which point another cluster of doubtful islands was reported to exist, as well as a continuous batch given us by the whalers in 1826 and 1827, as far as 135°, and which we then sought in the Blossom, without success. As the Starling would preserve a W.b.S. and the Sulphur a W.b.N. course through that region, avoiding the Blossom's track, they ought to have been found if they existed.

22nd. Wind light, Medusæ more plentiful, and a few sticks floating, excited our hopes of finding land; but the current having been determined to set S. 86° W., this would bring them from Clarion island.

24th. Breeze varied much in strength, water smooth, Tropic birds, (Phaeton Ætherius,) and frigate Pelican (Pelecanus Aquilus) also observed. As these latter birds do not go far from land, I am disposed to believe some one of these reports to be well founded, but the position erroneously determined. Weather unfavourable for astronomical observations, even should we discover land.

25th. Weather variable in puffs, varying our rate from five to nine knots. Shortly after noon the appearance on the lee quarter caused me to suspect land in that direction, but the indication was not sufficiently distinct to warrant any deviation from our course.

Should chance lead me in this direction again, I shall certainly cross the meridian of to-day fifteen miles further south. Tropic birds, frigate pelican, gannet, and flying-fish, were noticed, and during the day we had partial showers.

26th. Same observations as to wind varying in puffs about nine A. M. and P. M.: fewer birds, but no symptoms of land. On the 27th entered the limits assigned to Whaler's discoveries. 28th. Crossed Blossom's track. 29th. Passed over many positions assigned. No symptoms of land beyond the smoothness of the water, wind coming in gusts at nine A. M, and P. M., and frequent showers—the last one of the strongest indications within the tropics. The spaces thus examined must, however, relieve the general navigation of this region.

I have been thus minute upon this subject, as I cannot divest myself of the impression that land exists in this neighbourhood. So many assertions can hardly rest on imagination.

By the ordinary system of laying down the track of vessels, no clue is obtained as to the actual limits of examination. The actual limit of vision is entirely lost sight of. To render this more distinct in the Sulphur's track, great attention has been paid to the radius of vision, so that the dotted circles distinctly point out where no land can exist. The space has also been sounded two hourly, with as much line as our velocity would admit.

Sharks troublesome; lost one patent log, and the

rotator of a second damaged. Mr. Massey should invent something to obviate this nuisance.

On July 7th, at daylight, saw the outline of the island Maui, (or Mowee of the charts,) and about eight the N.W. extremity of Hawaii (Owhyhee.) The heavy clouds capping the summits of both islands prevented our obtaining a glimpse of these remarkable peaks.

The numerous cascades resulting from the showers afforded us a very interesting embellishment to the lower scenery, which we were passing within three or four miles of the breaker line. To seamen there is a peculiar enjoyment even in the sight of fresh water; but the numerous silver threads of it here sportively displayed must be seen to be duly enjoyed. No description can convey the idea of their number and variety, and a sketch including twenty leaps within one or two hundred yards, would appear almost a burlesque, yet such was the fact. About four we passed the east end of Maui, and came suddenly upon Morotoi, (or Molokoi,) Rana (Lana) visible in the interval.*

The view of Molokoi from this position is very singular. Four exactly parallel outlines of most picturesque and lofty cliffs appeared almost a visual deception, or the effect of quadruple refraction. But as we advanced it proved in this instance a reality; height about four hundred feet, and varying but slightly from the perpendicular.

* All the words formerly commencing with R now take L.

The current being strong in our favour, and our velocity above eight knots, the scene varied sufficiently to preserve our interest from flagging. Here also, as on Maui, several very pretty and loftier cascades embellished the scenery, which was rich in colours, but like the work of the scene painter, not bearing to be examined too closely. Attired in nature's clothing only, the scene will probably never be subjected to cultivation.

About sunset we were off the N.W. extreme of Molokoi, and steering for Oahu. About midnight we found ourselves much closer to the breakers of the latter island than our speed warranted us in expecting, the current having helped us considerably.

Fortunately we were on the alert, and hauled off in time to escape danger. The wind being very strong, with rain, we hove to until daylight and then bore up for Honululu.

At six the pilot's boat came off, bringing Mr. Reynolds; the pilot being drunk, and the wind not admitting our entry, we anchored outside. I landed, and was received with much warmth by my old friends the British and American Consuls. On the morning following the ship was anchored within the harbour, and our refit commenced.

The Consul applied for my interference, in the question raised against this government, by the forcible entry of the brigantine Clementine, under the British flag, and compelling her to receive on

board as prisoners two French missionaries, brought by her on her late voyage hither from California,—thus making a prison-ship of a British vessel—after her cargo had been started, the vessel returned to her owner, and these people were permitted to land. The government at first had endeavoured to carry their object by bribery with the master and owner; on this failing, they had recourse to force; on which the Consul advised the colours to be struck, and the vessel abandoned. The Consul, I think rather indiscreetly, caused the flag to be burned.

I had before been apprised that the lady chief, Kinau, who governs the island, was entirely under the control of a missionary, not only obnoxious to the civilised community, but also in bad odour with the natives and chiefs themselves, and that I should not be able to obtain satisfaction. It was further reported, that by his advice (or command) the cruel and barbarous act of sending these two persons to be landed on a *desolate part of California* in 1830, was carried into effect merely from the fancy that his followers would be seduced by them from his style of religion,—if I am to profane the name by terming it such.

My duty, however, was plain. If I could succeed in opening their eyes to the injustice and inhumanity of their act, as well as the grievous insult they had, through their ignorance, offered to our flag, *tant mieux*. Failing in that, stronger measures would follow.

Having given due notice to Kinau and her chiefs that I wished to speak on this subject, they assembled at her house, Kuanoa, her husband, receiving us with military honours, in his general's uniform. The chiefs were present, as well as most of the missionary establishment.

Finding remonstrance useless, and that their principal missionary leader, Mr. Bingham, evidently spoke in his own name as well as theirs, and therefore that they were not free agents, I ventured to acquaint them that stronger arguments must be resorted to, and I instantly ordered the brig to be recaptured, and the British colours re-hoisted.

Mr. Bingham then ventured to show himself in his true colours, and, intimating "that blood would flow from this act," I most distinctly assured him, "that having now ascertained his character, I should visit that threat on his head, and that his life should answer for the first drop of British blood which his agency should cause to flow." It is true that I did accompany that threat with my clenched fist, but totally false that any action of mine towards Kinau could be so construed. Indeed, I felt too much pity for her situation, and so far from the slightest animosity at that instant existing, she shook hands with me, and Kuanoa, the husband, warmly pressed my hand at parting.

I immediately decided on landing the missionaries, and sending an officer in the Clementine to Maui, requesting the immediate presence of the king, who was there on a visit.

At this critical moment the French frigate La Venus, of sixty guns, made her appearance. Captain du Petit Thouars sent to request I would allow him to act in conjunction, and on his landing, a fresh interview was requested and obtained. However, finding them stubbornly determined on maintaining their acts, we came to the determination of awaiting the arrival of the king.

Before sunset the missionaries were reinstated in their domiciles, accompanied by the white population, and crowds of natives, who appeared to rejoice in the act. The recaptured Clementine, in charge of Mr. Speck, mate, and under her proper banner, triumphantly quitted Honululu to apprise the king of our first acts.*

The Starling hove in sight about the same time, and so far from showing any hostile feeling, Kuanoa himself, with his large war canoes, assisted in warping her in.

The Venus I had been taught to expect in these seas, her voyage being partly scientific; our meeting, therefore, was very cordial. At a dejeuné given on board the Venus to the Consuls and myself, the flags of England and America combined were hoisted at the fore, and a salute of eighteen guns fired. I regretted much our inability to return the salute, our orders forbidding it except in cases of necessity.

On the 20th the king arrived, contrary to the

* These and the foregoing *facts* are noticed as a short denial of the false statements which have appeared on this subject.

expectation of many, as we had been given to understand that every missionary entreaty and threat had been exerted to prevent him. However, as his reply to my letter was friendly, and very decided, I will do him the justice to say that I never for an instant doubted the pledge he had given me.

" Lahaina, (Maui,) July 13th, 1837.

" Captain Belcher, of H. B. M. S. Sulphur,
" Honululu, Oahu.

" Love to you, Captain Belcher, of the British sloop-of-war, the stranger beloved. I have received your letter, and I give my consent to your request of me to return to Oahu: I will indeed return, that we may together adjust that affair; because it was I, indeed, that returned those two Frenchmen on board the vessel: I did it by the hand of Kinau, my assistant-chief, the one who banished them. As was formerly done to those two men, by the hand of Kahamanu, who was formerly my assistant-chief, so it has been done to them at this time. This was my doing; but the taking capture the brig Clementine, and the burning of the flag, and acting in opposition to Britain, I have not by any means done that, nor have my assistant-chiefs.

" A vessel has gone after Kuakini, governor of Hawaii; when he comes, then I will sail.

" With love to you,
" I am yours truly,
(Signed) TAMEHAMEHA III.

He came in his yacht, the Don Quixote, a barque purchased from the Americans, and mounting a few guns for saluting. I waited on him on board her, and arranged a meeting for the day following.

The captain of the Venus, accompanied by his officers, and the American and English Consuls, with myself and such officers as could be spared, repaired at noon to the king's house, where we were received by the officers attendant on the king, in their state uniforms, similar to those worn at the time of Lord Byron's visit in 1825. The king wore a round blue jacket with lace straps on the shoulders, and an embroidered crown on the sides of the collar, with fawn-coloured drill trowsers.

The chiefs were seated on chairs, in line with the king; the lady chiefs on a bank of raised mats behind. Our party occupied a line of chairs fronting them.

The king has not grown much since 1827, but is confirmed in his formation, stout built, and about five feet six. His reception was very cordial, but I could plainly discern that he had been previously severely schooled for this meeting.

Before proceeding to business, both Captain de Petit Thouars and myself protested against the interpretation or interference of Mr. Bingham; indeed we requested his absence. This latter point was not conceded, and he took up a position where he could command the eye of the king; but the sharp glances of some of the officers of both ships were too

powerful for him; and I believe something very much allied to menace from one of the lieutenants of the Venus damped his ardour, as he spent the remainder of the time with his head between his hands, nearly resting it on his knees.

The questions at issue were—1st, The forcible entry of the Clementine, and putting on board Messrs. Bachelot and Short.

2nd, The right of British subjects to reside at these islands, so long as they conformed to the laws, as established by treaty of Lord Edward Russell.

This latter they endeavoured to reject—indeed refused to acknowledge. The discussion on the merits of the case of Messrs. Short and Bachelot continued until four, when all parties being exhausted, the king proposed an adjournment until the following morning.

The only object carried was the consent that Messrs. Short and Bachelot should remain unmolested until they could be removed, on the guarantees respectively of Captain Thouars and myself. The meeting was then adjourned.

The discussion was resumed on the morrow at ten, and before two we had concluded by gaining their consent to the unmolested residence of Messrs. Bachelot and Short, until a favourable opportunity offered for their reaching some civilised portion of the globe, and that no further molestation should be offered the Clementine.

I then presented the claims of the owner for demurrage and other expenses.

Before signing the documents, the king requested a private interview in the evening, when I remained with him from seven until ten, discussing quietly the line of conduct he should pursue, and what the civilised world expected of him—reading frequent extracts from Vattel, which I sent for to confirm him.

As I gave him to understand that I would not quit the port until I had a definitive answer for my government, relative to the disputed clause in Lord Edward Russell's treaty, he immediately consented to adopt my reading, and signed a copy that evening, promising another in Hawaian on the morrow.

He protested strongly against the charge of having *forcibly* taken the Clementine.

He expressed himself "very much indebted for this visit of kindness," and observed, "If I had one who would advise me as you do, occasionally, I should not get into so many scrapes." We parted on the best of terms.

I was escorted home by the officer of the guard and two soldiers, the Governor Kuanoa, and two lanthorns. This escort possibly prevented mischief, as, near the fort, we encountered a native with a musket, in a very suspicious attitude. The officer of the guard struck him full in the face, and he darted off in the direction of the fort. It has been surmised that foul play was intended. The fact of sending the guard, &c., was somewhat suspicious, although it did not occur to me until the following day, when I was told it was their intention to destroy me.

On the following day I sent a letter to his majesty, acquainting him that the question touching the insult to the flag would remain for the commodore to dispose of, as well as the damages done to the owner of the Clementine. At the same time I sent a formal instrument for his signature, agreeing to the full reading of the treaty entered into with Lord Edward Russell, and further engaging to grant a fair trial, &c., before the usual prerogative of majesty was exerted against any British subject. This was completed in due form, and returned with an Hawaian copy.

The Starling had been despatched the previous day to Atooi, (Taui,) and by four o'clock, our affairs being settled satisfactorily, we embarked the Consul and family, and quitted the Port of Honolulu. As the Venus had saluted our flag, I thought it as well to give them a cordial parting cheer, and for this end gave her a pretty close shave. The cheer was heartily responded to by our French friends, the national colours of the French at our main, and the union at that of the Venus. Before sunset we noticed her get under weigh, and depart for Kamtschatka, Nootka, and Monterey.

At two the day following we were anchored in the snug bay of Hanalae, on the N.W. side of the island of Atooi. Here we found the Starling had arrived a few hours before us. These were the two first British vessels of war which had entered the port.

View of Honolulu Harbor, Sandwich Islands

Our object in coming hither was to embark bullocks, which, we were assured, were better and cheaper than at Oahu; and we were fully repaid for the trouble; we obtained noble animals, and meat as fine as in England.

During our detention, the survey of the bay was completed. At four, on the 27th, we took our departure for the north, taking leave of civilized society for some months. Hanalae, besides beef and vegetables of the finest quality, furnishes fruits, poultry, turkeys, &c., cheap and in abundance. Water can be filled in the boats, by sending them into the river.

I shall now return to Oahu, and compare it with what we left it in 1827, just ten years before. On the first glance I thought it had retrograded.

The appearance of the natives was miserable and dirty; their features apparently coarser, and that brightness of eye and independence of carriage which freedom alone can exhibit, were decidedly wanting.

The habit of frequent bathing, which constituted half their original existence, is entirely exploded, and not one good trait or feature by which former navigators have described them can be traced!

The substitution of the mud brick, or adobe of the continent, for their former neat wooden paling, gives the town a most gloomy aspect, and adds a dirty cast, independent of the actual nuisance arising from the clouds of dust which dry weather and strong sea breezes bring to your house, resulting from the constant destruction of the adobes.

The native population has decreased in a degree exceeding ordinary calculation, whilst that of the foreign residents has increased in the same proportion. In 1827, with the exception of the Consul's family and the missionary ladies, not a foreign female could be found. At a ball given during our visit no less than twenty couple stood up. Some ladies then were absent from illness, and those of the missionary families could not be expected to attend such sinful pastime.

No apparent change has taken place in the cultivation of the land; they are still in the same state of idleness as to their own affairs. They cannot cultivate their land, because their labour is demanded for the church, the missionaries having obtained the necessary edict which compels the natives to labour on the reefs, to procure blocks of stone for the purpose of building a new church. The first duty, of obtaining subsistence for their families, was deemed but a secondary consideration. If they presumed to do so on Sunday their punishment was double labour the ensuing week. Even the servants of the foreign residents were interfered with, and arbitrarily marched off.

This state of things could not exist long; great discontent was manifested by all parties, and it probably would have proceeded to some decisive act, had it not been "considered advisable to suspend operations for one year."

At Tahiti the natives are compelled to frequent

the church. Here the attendance may be avoided, but "you shall build one of stone." What, it will be asked, is this amount of labour? To cut a block of compact coral limestone from the reef, about three feet long, two wide, and one deep, at low water, and transport it to the shore—say half a mile.

The houses of the foreign residents are considerably improved; shops are more numerous and well supplied, and several of them are kept by Chinese.

The chiefs and upper classes are better clothed, and appear as if they were accustomed to dress properly. Of course the grog shops, bowling ground, billiard rooms, &c., have increased in proportion.

The port, however, is less frequented by whalers, in consequence of their stubbornness in maintaining a ridiculously high port charge. Atooi, where the port dues are evaded, is rapidly seducing the old hands from this port, which, indeed, they do not enter but to refit. I endeavoured to point out this mistake to the king, but his reply was, that the port was in the hands of Kinau—or, in other words, ruled by the missionaries.

If the king and chiefs continue their present course, this island will never improve, but for the benefit of the foreign residents.

The Bonin groupe, I am told, is rapidly improving in settlers and importance. It is encouraged, I believe, by our Consul here. If any legal authority existed there, I have little doubt but half the trade

of the whalers would be taken from hence, and would aid in establishing the Bonins.

The king and chiefs appear to desire to act in conformity with the established customs of civilized communities, but are led astray by bad advice, which, in the absence of those supposed to be empowered to advise them, they consider themselves bound to adhere to.

I found this observation particularly on what escaped from the king. He appears at all times anxious for the advice and support of Great Britain, and asked "if another lord would come out to settle this affair?" or "who would come to advise him?" He asked many questions; listened eagerly to every suggestion calculated to avert any future misunderstanding between our governments; and, so convinced was I of his sincerity, that, although my success was more than doubted by all about me, I sent a written document by my first lieutenant, stipulating for his consent in toto to my wishes relative to the disputed article of the treaty, and an engagement on his part not to exert the undoubted right of a sovereign power against a British subject, without due notice to our Consul, and satisfactory reasons to the government; and this document he duly signed without comment, at the very instant of departure. I much regret that I had not an opportunity of paying him my last adieus, after his very decided courtesy towards me.

Amongst the improvements, and one of the greatest importance to the future welfare of Oahu, or of these islands generally, I must not omit to mention with the warmest approbation the school for the children of mixed parents, where they are instructed not only in all the branches of British charity education, but also in the English language. I was astonished at their proficiency. This school is supported by voluntary contributions of the white residents, and those frequenting the port, and is under the especial supervision of the ladies resident—particularly of the Consul's family.

Some of the specimens of needlework exibited to tempt our patronage were beautiful. These were the productions of children not exceeding eight years of age.

The example of these children at some future period will, it is to be hoped, materially tend to improve the society of Oahu.

In the present state of missionary thraldom they cannot much longer continue. The introduction of a clergyman, and the ordinary course of devotion, must soon supersede the present system. Such a friend to advise the king would probably cure all the heart-burnings which at present distract the community. His disposition is good, the people have ever been mild and amiable, or they would never have submitted to the yoke which galls them. The course they are at present pursuing is equally opposed to their feelings and their interests. The civilized world has from

time to time been interested in their acts, by the prospect of a semibarbarous community rising into the rank of civilized society, and has extended the hand of friendship to assist in their elevation. Great Britain, France, and America, have completed treaties, and sent consuls to reside among them. But if repeated acts of outrage, fit only to be attributed to the dark ages from which they have but just emerged, continue to sully their flag, in which the British union is blended, then will they be hurled back from that footing, into the insignificance which their bad advisers and their consummate presumption will so richly merit. And should a vigorous exertion of power once be called for, then is their sun for ever set, and the flag of these islands, now so proudly but wantonly waving, may be confined to their own ports, as has been the case with San Domingo.

Possibly it is not known that the flag of these islands has our union in the upper canton, with blue, red, and white stripes three times repeated.

At Lahaina (Maui) a college is founded, of which Mr. Andrews is Principal. From specimens I have examined of their progress in engraving, (charts, and I believe those of the Sandwich Islands are in progress) their proficiency is very creditable; and from what I saw of Mr. Andrews himself, who interpreted for me at the interview with the king, I had reason to admire him.

To return to Hanalae: at the present season the anchorage is safe, but when the N.W. gales blow, a

very heavy sea must tumble into the bay. I am informed that a Russian store-ship rode out the season in spite of everything. The anchorage is pretty well covered by a spit, over which there is about nine feet; but there is not sufficient space in bad weather for more than three vessels, although in the present fine season the bay is spacious.

The landing is within the mouth of a small river, which carries, for a considerable distance up, from one to three quarters of a fathom, into fresh water, and is further navigable for boats or canoes (drawing three feet) several miles.

The scenery is beautiful, and my surprise is that such a favourable situation should so long have been overlooked. The Consul possesses a tract of land on which his tenant (Kellett, an Englishman) feeds cattle, makes butter, cheese, and farms to great advantage. I am certain that our men derived more nourishment from the cattle we embarked there than from any previous diet, and contrary to the general feeling, preferred it to salt, regretting its loss. I would therefore strongly advise ships of war to sacrifice much to secure these advantages.

Our attention was now directed to a very different scene. Hitherto we had enjoyed the balmy airs of the tropics, seldom too warm, never oppressive. We were no longer to bask in sunshine, but to meet the chilling blasts from Mount St. Elias, the position of which our orders required us to fix, as

well as to verify generally the principal longitudes of Vancouver.

Our progress northward was tedious and uninteresting. On the 17th August, the Starling was despatched to Port Mulgrave, to make the necessary observations for fixing the position of Mount St. Elias, which I suspected might not be seen clearly every day, and therefore might cause us detention. Our course was directed northerly, wherever she could fetch, Port Chalmers, Etches, or Wingham Island.

On the 21st, with light airs at noon, we expected to see Montague Island; but the current having driven us much to leeward of our reckoning, we determined on seeking Rose Island, or the nearest spot on which I could secure our meridian distance. About five, Rose or Middleton Island was plainly discerned, which put an end to our constant excitement by the frequent reports of land which proved to be only clouds.

At nearly dusk, breakers were observed between the point we were steering for and the ship; a breaker curled close to our lee-beam; the lead giving fifteen fathoms, previous cast forty-four; hauled off into forty-five.

It being calm we drifted during the night to the south-east, and at six the following morning anchored in twenty-one fathoms. Accompanied by Mr. Hinds, assistant-surgeon, I landed to determine

the position, but drizzling rain frustrated this object, and the setting in, forbidding all further prospect for the day, compelled us to embark.

The island, which does not exceed thirty feet in height, is a very soft spongy soil, on a slaty micacious schale, intersected by quartz dykes. A few fuci, land shells adhering to ferns, and three small alca, comprised our collection. The ripples I had observed were found to arise from ledges of rock, on which as little as two fathoms was found. The tide was ascertained to set—flood, north-east,—ebb, south-west.

Strong moanings, or rushes on the surface, intimated that we should have sufficient wind; however, before weighing I determined on trying what the bottom would afford, and succeeded in hooking three fine halibut, two of which I secured; one weighing a hundred and forty-six pounds, was given to the crew, the other divided amongst the officers.

Shortly after five we weighed with the breeze strong from the northward, and a heavy swell from the eastward; the wind veering enabled us to shape a course for Port Etches, which we now had a prospect of reaching easily, but not before dark.

At nine we observed the aurora for the first time. The corruscations were all very brilliant, but instead of broad masses of wavy lambent light, it exhibited chiefly sharp rays shooting to the zenith, from E.N.E. to N.W. The stars clearly visible, with diminution of light.

At dawn, the snowy ranges of mountains from the termination of Montague Island as far as Cape Suckling, or in the direction of Kaye's Island, were entirely free from clouds or vapours, a sight not common in these regions, and generally a warning for bad weather. As the sun rose, our attention was anxiously directed to witness the effect of its rays on the innumerable snow-capped pinnacles, which this splendid range presented, each, even the lowest, an object of interest, compared with our late scenery. We were, however, disappointed; their obliquity, added to the faces being to the S.W., prevented the effect we anticipated. It was, however, accomplished at sunset.

Light baffling airs, with oppressively hot sun, kept teazing us until after noon, when we appeared to move but tardily towards the passage between Montague and Hinchinbrook Islands, where I was prepared to expect strong tides. About eight we had doubled the Cape, and a gig was sent to examine the coast; but shoal water, contrary to Vancouver's idea, rendered it necessary to anchor in seventeen fathoms. The tide ran at the rate of three knots, but not sufficiently strong to cause me any uneasiness. The boat returned without information; we therefore remained quiet for the night. Several fine fish were caught.

At four we weighed, and followed the gig sent ahead to point out the entrance to the port. Worked in against a fresh N.E. breeze, soundings on

both sides giving twenty-five, thirty, and forty fathoms, close in at our tacking position, almost touching the rocks.

About nine we anchored at the mouth of the small entrance to the inner harbour, in seven fathoms; pretty nearly in the position mentioned by Vancouver.

The weather immediately became threatening, blew very hard, brought one anchor home, and compelled us to let go the second.

We were visited by the Russian residents, who betrayed some little alarm at our arrival, and at one time I thought would have retired. The stay of the principal was short, but he returned after we anchored, enveloped in his waterproof cloak, formed of the small intestines of the seal, and endeavoured to persuade us to enter the inner harbour. This I certainly would have done, had I purposed remaining long. The day continued pouring with rain, debarring any kind of occupation or amusement.

The day following the wind subsided, but continued from the same quarter, with frequent showers. I called on the Russian resident, who evidently had made some preparation to receive me, so far as hot water and a clean table-cloth were concerned, but the prevailing odour was that of seal-oil. He regretted that he had nothing to present to me but a tanned skin dress, embroidered by the natives of the Aleutian islands, precisely similar to those

which we obtained at Avatcha, and one or two baskets. As I was well aware of the exact meaning of this attention, I did not hesitate in receiving it, particularly as I had brought with me presents of tea, sugar, and other comforts.

He then took me through the fish and oil establishment, which was inches deep in hardened filth and seal-oil; and thence to the room containing peltry. I was much disappointed at the quality of the furs. They comprised sea-otter, sable, rat, squirrel, fox, wolf, bear, seal, and beaver, very large and heavy. The only desirable skins were those of the sea-otter and sable, and they were not first-rate. As it is strictly forbidden to sell anything, and our visit bound us in honour not to permit anything of the sort, I felt little inclination to remain in this valuable repository,

This establishment of the Imperial Russian Fur Company consists of the official resident, eight Russians, and fifty Aleutian and other allies. The houses are included in a substantial wooden quadrangle, furnished at its sea angles with two octagonal turrets, capped in the old English style, and pierced with loop-holes and ports; the summits of the lines are armed with spikes of wood. It is calculated to sustain a tolerable siege, under determined hands. The sleeping apartments, or "'tween decks," as we should term them, are desperately filthy. The whole range is warmed by Dutch-ovens, and the sides being eighteen inches in thickness, are

well-calculated to withstand the cold, as well as to defy musketry.

The native allies, who live in huts outside, are filthier than any Esquimaux; arising, doubtless, from their life of inactivity, resulting from doubtful dependence. On my return to the ship, I found that a boat-load of salmon had been sent, which afforded the crew a fresh meal, of a pound and a half of salmon per man.

A survey of the port was effected, malgré the unfavourable state of the weather, and our astronomical and magnetic observations were secured. I had completed my observations at a small island which I had selected for a station, but was at a loss for a mark, and had directed a tree near me, which was deprived of bark, to be felled for this purpose. I had barely time to arrest the sacrilegious order on perceiving letters on its sides, and easily traced

PORT ETCHES. SHIP KING GEORGE.

NATH. PORTLOCK, COMM^{R}.

JULY 22, 1787.

On my return on board, I found in Mavor's edition of Portlock and Dixon's Voyage, Portlock notices having trimmed and marked a tree on Garden island in this manner.

At present the island is covered with pine trees: we could not trace any remains of plants differing from those on the nearest land. The surface of the Garden must have been very small, nor did the grass and mould in any part exceed six inches in depth.

On the side of the bay within, where he had his tents, a species of wild grain was noticed, and a large spot free from trees. It was gratifying, however, thus to meet some token of our adventurous countrymen, even in such an inhospitable clime; a sensation only to be appreciated by wanderers like ourselves.

We found strawberries, whortleberries, blaeberries (arbutus), pigeonberries, and a small cranberry, in tolerable profusion, without going in search of them.

On Wednesday, the 30th August, we prepared for sea, and took on board spars and firewood. I paid my final visit to the Resident, leaving him a further supply of comforts, for which he evinced much gratitude.

About two we weighed and beat out, the fort saluting as we passed.

Port Etches might furnish a most complete harbour, if vessels frequented these regions, or a station should ever be required in so high a latitude. The currents, however, between it and Montague Island, render it difficult of approach in light winds, and the Russian informed me that many sunken rocks lie off Cape Hinchinbroke. But as they designate a rock over which there may be ten or fifteen fathoms, a *sunken rock*, they probably allude to danger to ground tackle.

It was on one of these ledges that we anchored in seventeen fathoms, and on tripping had twelve before clearing the rocks.

The result of our observations at this port gives

Vancouver in error nearly to the amount which he ascribes to Cook.

Finding ourselves becalmed near the flat island mentioned by Vancouver, and wishing to verify its position, I started in my gig for this purpose, but had not proceeded far when a light favourable air brought me back: all sail was crowded for Cape Hammond, which was rounded at midnight.

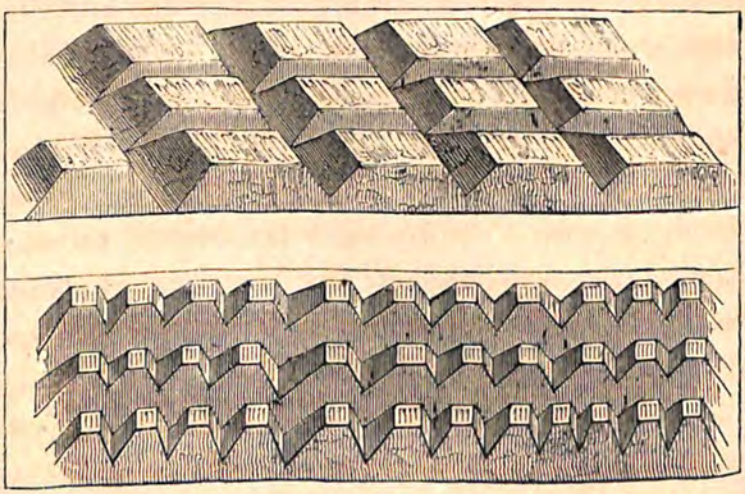
I had been running my eye over Vancouver, and noticed the difficulty he described in getting round this cape, by reason of an adverse current; otherwise I had fully intended to anchor within Wingham Island, and endeavour to intersect Mount St. Elias from thence, as well as rectify the errors in that neighbourhood. But time was now too precious, and the ensuing morn proved that my determination had been judicious, as we had gloomy weather, no sun, light wind, and could scarcely stem the current.

All our transit bearings and other observations, plainly indicated the charts to be erroneous about this region. A river appears to flow near Cape Suckling, which has not been noticed.

Our attention was suddenly attracted by the very peculiar outline of ridge in profile, which one of our draughtsmen was sketching, apparently toothed. On examining it closely with a telescope, I found, that although the surface presented to the naked eye a comparatively even outline, that it was actually one mass of small four-sided truncated pyramids,

resembling salt-water mud which has been exposed several days to the rays of a tropical sun, (as in tropical salt marshes,) or an immense collection of huts.

For some time we were lost in conjecture, probably from the dark ash colour. But our attention being drawn to nearer objects, and the sun lending his aid, we found the whole slope, from ridge to base, similarly composed; and as the rays played on those near the beach, the brilliant illumination distinctly showed them to be ice. We were divided between admiration and astonishment. What cause would produce those special forms? If one could fancy himself perched on an eminence, about five hundred feet above a city of snow-white pyramidal houses, with smoke-coloured flat roofs covering many square miles of surface, and rising ridge above ridge in steps, he might form some faint idea of this beautiful freak of nature.



APPEARANCE OF ICE.

Kaye's Island, viewed from the eastward, presents the appearance of two islands. The southern is a high table-rock, free from trees or vegetation, and of a whitish hue; the other is moderately high land for this region, with three bare peaks; its lower region being well-wooded.

Wingham Island, which can be seen to nearly its whole length between Cape Suckling and Point Le Mesurier, (the north part of Kaye's Island,) is moderately elevated, rising in three hummocks, which are bare on their summits. The southern at a distance, owing to the lowness of the neck, appears separated. The whole is well clothed with trees.

In one direction from the southward, Cape Suckling exhibits on its bower profile, the brow, nose, and lips of a man. It is a low neck, stretching out from a mountainous isolated ridge, which terminates about three miles from it easterly, where the flats of the ice pyramids just alluded to terminate. Apparently the river or opening near Cape Suckling flows round its base. There is little doubt but that we may attribute the current to this outlet, arising probably from the melting of the snow. We had less strength of current after passing this position. Immense piles of drift-wood were noticed on each side of the opening, but *none elsewhere.* Floating trees of considerable magnitude were numerous, and one sufficiently interesting to cause its admeasurement by sextant, which afforded two hundred feet as its probable length. Current northerly. Water,

within three miles of the land, whitish, showing a distinct division, doubtless snow-water and mud.

We continued to be teazed with light variable airs and strong currents, and on Monday, the 4th September, finding the wind failing, I determined on keeping in small water, so as to be able to anchor, Mount St. Elias being then within fair distance. About eight we anchored in fifty fathoms, mud; the day beautifully fine, horizon well defined, and our position as perfect as could be wished for our observations, all of which were obtained, and satisfactory.

The current was found to set one mile and a half per hour west, varying but slightly in force, and *not at all in direction.* At this position, not a single drift tree was noticed. We were within the white water about two miles, which I am now satisfied flows from the ice. But why it preserves its uniformity of strength and direction, is yet a problem to be solved.

On the morning following it was cloudy, with rain, and the breeze springing up compelled us to trip. Towards the evening it cleared up, and we were treated with a most splendid picture of St. Elias and all the neighbouring peaks, in full beauty, not a vapour near them. Each range is in itself an object worthy of the pencil, but with the stupendous, proud St. Elias towering above all, they dwindled into mere hillocks, or into a most splendid base on which to place his saintship.

Although Vancouver describes St. Elias as "in re-

Mount St. Elias.

Ex Libris C. Hart Gross Marlboro Sc. 1845

gions of eternal snow," yet his edges, to the very summit, present a few black wrinkles, and the depth of snow does not, even in the drifts, appear to be very deep.

My anxiety to reach Point Riou and obtain observations on it, induced me to hold on by the land. Indeed there was no other chance of overcoming the current. The coast presents so little to recognise in Vancouver's chart, that I despair of doing more than fixing the position of Mount St. Elias, which, if Kellett has been successful in seeing from Port Mulgrave, will be now secure.

Towards noon the breeze favoured us sufficiently to reach into Icy Bay, very aptly so named, as Vancouver's Point Riou must have dissolved, as well as the small island also mentioned, and on which I had long set my heart as one of my principal positions. At noon we tacked in ten fathoms, mud, having passed through a quantity of small ice, all of a soft nature. The whole of this bay, and the valley above it, was now found to be composed of (apparently) snow ice, about thirty feet in height at the water cliff, and probably based on a low muddy beach; the water for some distance in contact not even showing a ripple; which, it occurred to me, arose from being charged with floating vegetable matter, probably fine bark, &c.

The small bergs or reft masses of ice, forming the cliffy outlines of the bay, were veined and variegated by mud streaks like marble, and where they

had been exposed to the sea, were excavated into arches, &c., similar to some of our chalk formations. The *base* of the point, named by Vancouver Point Riou, probably remains; but being free, for some distance, of the greater bergs, it presented only a low sand or muddy spit, with ragged dirty-coloured ice grounded. No island could be traced, and our interest was too deeply excited in seeking for it, to overlook such a desirable object.

On our inshore tack we had five fathoms and three quarters, and were therefore quite close enough to make certain of our remarks, short of actual contact, which the favourable breeze would not admit of without some more important results.

We edged along, keeping within a mile and a half of the shore, carrying from ten to fifteen fathoms, until night, when we bore away to cross Beering's Bay, and rejoin our consort in Port Mulgrave.

I perceive in Vancouver, (vol. iii. p. 204,) twenty-three fathoms was his nearest approach, and within one league. He also terms it "low, well-wooded, with a small detached islet, a little to the westward." Also, "Eastward from the steep cliffs that terminate this bay, and from whence the ice descends into the sea." It is very probable there has been a misreading of his manuscript, or that severer weather had covered his trees with ice, for we saw none, and that portion of the coast was examined with his voyage constantly before me, and the discrepancies discussed with our spy-glasses on the objects.

Our observations and speculations, on the motion of the ice now before us, led us to suspect that the whole of the lower body is subject to slide, and that the whole of the substratum, as frequently found within the Arctic Circle, is a slippery mud. I am satisfied that this is the case in Icy Bay, as one berg, which was well up on the shore, moved off to seaward; grounding again near what I took for Point Riou.

This leads me back to our observations on the mathematical forms observed on the 3rd, after passing Bingham Island, and I perceive that Vancouver notices not only the ice, but (at p. 209, 210, vol. iii.) attempts to account for its formation, remarking that the ice observed (before reaching Point Riou and to the southward) was not so clean, "most of them appearing to be dirty." How came they so?

If the dark, "dirty" ice had been near the beach, it could readily be accounted for, by having been agitated with the beach mud, and forced up by gales. But the reverse is the fact. The darker ice was on the high ridges, and the bright near the sea. Only the theory of a slip would allow of its moving down the inclined plane without disturbing its mathematical arrangement. Vancouver's visit occurred in the latter end of June, ours in the early part of September.

In Icy Bay, the apparently descending ice from the mountains to the base was in irregular, broken

masses, tumbling in confusion, similar to ice forced in upon the beach by gales of wind. They were doubtless detached masses from the mountains. But near Cape Suckling the inclination of the steps was very slight, and apparently had subsided perpendicularly for many miles in gradation.

The forms observed will best be illustrated by the sketch. (Vide plate and woodcut.)

By night we had a confirmed fair wind, a relief of no small moment bodily, as well as mentally, for anxiety most decidedly deadens the faculties; and I was anything but easy respecting the Starling, as from Kellett's sanguine temperament he might think our protracted absence imported accident, and starting to seek us, might miss us for some time.

On the morning of the 7th we had sighted the land near Cape Phipps, and found that we had been driven much to the westward by the current. Fortunately I was prepared for this, and hauled up until I brought Mount Fairweather over Cape Turner, which the chart showed to be a good leading mark (or N. 88° E.) for the entrance.

We were even in doubt on opening the mouth of the port, which appeared like a cluster of islands. However, I knew, if she was within, that a gun would soon bring some signal in return, and was not deceived, as the smoke of the Starling's reply soon curled over the points. Being sure of our mark, we bore up for the anchorage, passing from soundings at sixty fathoms suddenly into thirteen and

eight, and as suddenly deepening again to forty, until reaching the ledge off Cape Turner, when it exceeded the length of our handlines.

The observations in Vancouver were sufficient to have taken us in, but we picked up Kellett off Cape Turner, and instantly availed ourselves of his later examination of the port. We took up our berth close round the low gravelly point of the island, in thirteen fathoms, within three hundred yards of the beach.

The Starling had only arrived three days before us, having been, like ourselves, delayed nine days by currents and baffling winds. The day was sufficiently fine to enable me to secure all the requisite observations for latitude, time, astronomical bearings, and altitudes of St. Elias and Fairweather, as well as magnetic details.

The principal chief of this tribe, Anoutchy, paid his visit of ceremony, accompanied by his lady. Better specimens of the improved state of the Indians I have not seen. Both were clean, and well-dressed; the chief by the aid of an old coat and trowsers bestowed on him by Kellett; and his lady in a dark-coloured cotton gown with blue and scarlet cloak, *à la robe*, over all. He had assumed the name of Iwan Iwatsky, probably in compliment to one of the Russian traders, who frequently visit this port.

Their manners were good, even in some degree polished; and although not particularly well-bred

at table, they were evidently not unacquainted with the use of knife, fork, and plate.

It was a very gratifying sight to observe such a change amongst such a set as we found them associated with, even comparing them with their compeers (as chiefs).

A NATIVE CHIEF OF PORT MULGRAVE.

Kellett acquainted me that this chief possessed very high notions of territorial right, and had thrown difficulties in the way of wooding and watering, which he was glad that our presence would remove.

Having given him a few presents, and intimated

my intention of adding to them at my departure, he was well pleased, and retired to the shore.

On the first arrival of the Starling, but few canoes had appeared; these nearly doubled daily, until his position called for a vigilance which was unpleasant, and made them comparatively prisoners.

Our presents having allayed every unpleasant feeling, the utmost security was felt, so as to admit of full range to sportsmen and naturalists.

One peculiarity which I noticed in this tribe, is the manner in which they receive presents—as a due, not as a gift; and consequently no return is made for civility. They have probably had a lesson from their friends the fur-dealers, whose maxim is "nothing for nothing." Excepting in traffic, at which they are very keen, nothing could be obtained.

Fish, halibut and salmon of two kinds, were abundant and moderate, of which the crews purchased and cured great quantities. Game very scarce; one goose and a small blue-winged duck were all the birds that were brought for sale. The remains of Russian establishments were observed; a block-house perched on a cliff on the east side; and on the low point, where our astronomical observations were taken, the ruins of another; also a staff, with a vane and cross over a grave.

Strawberry plants were very numerous, but the ladies had cleared them of fruit, and were busied during the day procuring supplies of these and other

berries from the main, which, with salmon, appear to constitute their chief food.

Although many seal-skins were noticed, I did not observe this or animal food amongst them. Deer is said to abound, but on asking for it, they pointed to and named Sitka (in Norfolk Sound) and Nootka. Their implements of chase are far inferior to those in use amongst the Esquimaux or Aleutians.

The men are wretchedly clothed, in mats woven with the inner bark of the cypress, which is tough, flexible, and very soft. The women are very similar to the Esquimaux, differing however in the mouth-ornament, which is here worn in an aperture under

WOMAN WITH MOUTH-PIECE.

the lower lip. It is of wood, and retains its place by the elasticity of the flesh contracting in the groove, substituting larger ornaments as they grow up, or as the aperture elongates. They are as filthy as such tribes usually are, beyond description, and use vermillion, and any paint they can get. I must, however, except the chief's lady and daughters, as not wearing these ornaments, or paint, and exhibiting a dislike to it. The latter I had not the pleasure of seeing, but I am told one is very pretty, —I suppose we may add, " for the tribe."

On the 8th October, after completing our astronomical observations, and swinging the ship for local attraction, we took leave of our friends, and with great difficulty got up our anchor, owing to the tough clay in which it had hooked. Light airs prevented our getting out, although towed by the canoes as well as our own boats; I therefore turned her head to her old anchorage for the night. The chief and his lady, who had come to secure the assistance of their tribe, as soon as they perceived my determination, were quite delighted,—the only time I had seen them relax their features,—and haranguing the canoes, particularly her ladyship, they not only increased in numbers, but also in efforts, which had they applied earlier, we should have gained an offing. We were very soon at anchor. I think they gained a saw and hatchet for this manœuvre. They well knew every hour of delay would enrich them.

About six the following morning a breeze enabled us to get out. We were visited by the greater part of the canoes; but the chief and his lady, who had taken tea with us, and finished by asking for a little warm gin and water, were probably too sleepy to pay us a visit at this early hour.

About nine the breeze giving us too great a velocity for the canoes, and their saleable articles being expended, one by one they gradually dropped off and left us to pursue our course. We found some difficulty in gaining a fair offing, and stood in until the last moment of daylight, in order to ensure a long tack after eight P.M.

At half-past seven I left the deck, after the deep sea cast was given "no bottom;" but I was not quite satisfied that I ought to credit it. However, as I had great objections to discuss the matter with the mate in charge of the watch, I thought possibly that the next cast he would be more attentive. I had hardly been seated in my cabin five minutes, when breakers ahead and under the lee were reported, and the first lieutenant being on deck, relieved him from charge, and prepared for putting her about. On reaching the deck, I found her behaving well, and by timely humouring with the helm, she was safely stayed. After the sails were full, and with the wind abeam, the influence of the roller swell, within which we were, was such that she barely reached out. The least depth we found after she was tacked, and had gone several times her

length, was seven fathoms, sand. The swell was very high, not cresting outside of us, but roaring fiercely within, where all was one sheet of foam.

I am inclined to think this must have been an off-shore shoal; as at the time I quitted the deck no land could be seen within three miles of us. I did not make any signals until we reached forty fathoms, (fearing to draw Starling into danger,) when lights were shown, a blue light burned, and a gun fired. She did not perceive or did not answer, and my anxiety during the night was great. But trusting to the tried caution of Kellett, I felt easier for the Starling than if she had been in other hands.

During the night the wind and sea increased much, making her plunge heavily, but before daylight the weather had moderated, and the wind shifting to the westward, enabled us to crowd canvass for Norfolk Sound.

CHAPTER IV.

Norfolk Sound, Cape Edgecumbe — Sitka — Russian Governor Koupreanoff—Erect observatory—Establishment of Sitka—Small-pox among the Indians—Attention of the Governor—Entertainment to the natives—Probable cause of disagreements—Musical instruments—Slavery—Russian ball—Quit Sitka—Customary signals—Reach Woody Point—Anchor in Friendly Cove, Nootka—Arrival of Macquilla—Description of natives—Exhibition of magic-lanthorn and fireworks—A court fool—Sulkiness of Macquilla on our refusal to trade—Description of natives—Quit Nootka and proceed to San Francisco.

CHAPTER IV.

On the night of September 11th we observed the aurora. The breeze failed us about noon next day, within a short distance of Cape Edgecumbe. This remarkable land is not sufficiently described by Vancouver, or we should have reached the mouth of the sound, and derived the benefit of the flood-tide, instead of being compelled to anchor and warp off the rocks.

Cape and Mount Edgecumbe may be easily distinguished; the latter by being a high dome-shaped peak, on which streaks of snow and bright lines of reddish-yellow clay radiate from its apex. There is not any other high hill on the coast, and the bluff termination of its western slope is Cape Edgecumbe, which, if the sound be open, will also exhibit close under its southern side two small but high islands called "Bird Islands."

In the morning we had stretched well into the southern part of the sound, and at daylight tacked to the northward, with a light breeze in our teeth.

I despatched Lieutenant Collinson to Bird Island, in order to secure the latitude and longitude during the present favourable weather. He was soon joined by Kellett.

About three the breeze enabled us to lay up for the centre channel, the houses, citadel, and flags of Sitka showing very distinctly. About half-past three we were visited by the Governor's secretary, Mr. Alexander, in a caiack, with the customary string of boarding questions answered by merchant vessels; but finding, as they had imagined, a ship-of-war, these were laid aside, and a note containing the principal points of interest forwarded by the caiack.

The pilot having arrived, we beat into the channel, where, the breeze failing, we resorted to towing, aided by the Governor's barge and other boats sent to our assistance; a practice quite indispensable here, where nine vessels out of ten are forced to tow in or out. The Governor had also despatched his lieutenant-aide, who directed in person the exertions of the Russians, and did not quit us until dark, when, unable to stem the tide, we dropped anchor about two miles from the Fort.

The aide-de-camp then accompanied me in my gig to call on the Governor, Captain Koupreanoff, formerly commanding the Azof, seventy-four, in the Black Sea, who received me in the warmest manner, and tendered all the facilities which the port or arsenal could afford; at the same time, to put me

quite at ease in following up the objects of the expedition, he requested I would consider myself quite at home, and make my own arrangements as to the selection of a site for my observatory or any other pursuits. He speaks English well, and with true English feeling acted up to all he professed; indeed, his civilities were overpowering. The Sulphur is the first foreign vessel of war that has visited this colony.

Having warped the ship to within a cable's length of the arsenal, the observatory was landed on an island opposite, and we had the good fortune to obtain complete sights, and secure our meridian before midnight. The natives visited us, bringing salmon, &c., and some few skins, but the Governor having most kindly supplied us with more of the former than we could consume, and any traffic in the latter being expressly against the laws of the colony in which we were guests, I considered it prudent, and what courtesy demanded, that traffic on board or at the observatory should be tabooed. This soon shortened the numbers of hangers on, whose principal object is generally to note the nakedness of the land, and aid in depredations at night.

Independent of this, as the Governor informed me; that even in his time, two years, their fortress had been threatened, and that, although seven hundred only were now in our neighbourhood, seven thousand might arrive in a few hours, I deemed it prudent to keep them as much aloof as our sentinels,

without resorting to strong measures, could effect. At the same time, as our boats would be engaged in the examination of the sound during our stay, it became necessary to preserve an amicable feeling so long as they conducted themselves quietly.

The establishment at Sitka is situated on a broad flat delta, on the outer rocky peninsula of which the fortress, which is now rebuilding, stands. It is about sixty feet above the sea-level, and completely commands all the anchorages in the immediate neighbourhood, as well as the peninsula. The inner line, which traverses the longest base of this delta, is protected by a heavy line of picketted logs, twenty-five feet in height, surmounted en cheveux de frise, and flanked at the angles, within musket-shot of each other, by small block-house redoubts, loopholed and furnished with small guns and swivels. It extends from the sea in three fathoms, about one mile through to the river. This cuts off all connexion with the natives, but through a portcullis door, admitting into a railed yard those bringing goods to market. This door is closely watched by two or three guards, who, upon the least noise or dispute in the market, drop the portcullis, and proceed summarily with the delinquents.

As the traffic is generally conducted by women and children, and the Russians moreover employ female spies in the camp, they are always well warned, and fully prepared for any act of treachery. They have also a party of their allies, (slaves?) the

Kodiacks, on the opposite side of the stream, who conduct the greater part of the traffic with the natives, and catch and cure fish for the general consumption.

The present very substantial house erecting for the Governor and his establishment, is about one hundred and forty feet in length, by seventy feet wide, of two good stories, with lofts, capped by a lighthouse in the centre of the roof. The summit of the light is one hundred and ten feet above the sea-level, and commands a most extensive prospect. The building is of wood, solid; some of the logs measuring seventy-six and eighty feet in length, and squaring one foot. They half dovetail over each other at the angles, and are treenailed together vertically. The roof is pitched, and covered with sheet iron.

When complete, the fortifications (one side only of which at present remains) will comprise five sides, upon which forty pieces of cannon will be mounted, principally old ship guns, varying from twelve to twenty-four pounders. The bulwarks are of wood, and fitted similarly to the ports on the maindeck of a frigate.

The arsenal, which is immediately under, on the low ground, is well-stored with cordage of every description, and of very superior quality. The cables and large rope come by sea, but the yarn, in packages of fifty-six pounds, is transported on mules through Siberia. The range of artificers is very complete, and specimens of their workmanship in

View of Arsenal & Light House, Sitka or New Archangel

every department (more than an arsenal generally boasts) attest very superior ability.

The saw-mills, which are worked by water, are about twenty miles distant, half way down the south side of the sound, at Les Sources, or warm springs, which serves as a sort of Harrowgate to the colony.

Their most valuable wood is a very fine-grained bright-yellow cypress, of which they build boats, and export the plank in payment of debts contracted for supplies from the Sandwich Islands, (principally China and other goods.) They have a building slip, protected by a house, similar to those in our dock-yards, and have, I am informed, built one very fine vessel.

The establishment comprises that of a ship of the line, one captain, the governor; one commander, (lieutenant-governor;) and lieutenants, masters, &c., according to the number of vessels employed. The total number is about eight hundred, but of these many, if not the greater part, are invalids; but few able-bodied men were visible. Many, of course their picked men, were absent in their vessels, visiting the ports and collecting the furs, which were daily expected to arrive,—when the vessels are laid up, and they remain quiet until the spring.

I visited every part of the establishment with the Governor, and although a man-of-war's man's ideas of cleanliness are perhaps occasionally acute, (and these people are yet a shade lower in civilization by their intermarriage with the natives,) yet I

still witnessed comparative cleanliness and comfort, and much to admire, particularly in the school and hospital. In the latter, the name of the man, date of admission, and nature of disease, is placed over the bed of each patient, which in any contagious disease gives timely warning to any one fearing infection.

Not long since, the small-pox committed dreadful ravages amongst the Indians, and threatened to prove a still greater pestilence, by their neglect of their dead, and not unfrequently of the living, whom they quitted the moment they found them infected.

The colony having arrived from the westward, brought their own Sunday; consequently we were generally working on our opposite holidays, a measure I could only obviate by respecting their day of worship, and giving our men a holiday. To our artificers, who could not work at the dockyard on their Sabbath, this was a serious drawback, when we considered the short period of our stay.

I visited their church, and witnessed the ceremony. The interior of the edifice is splendid, quite beyond conception in such a place as this. The padre, who officiated in his splendid robes, was a very powerful athletic man, about forty-five years of age, and standing in his boots (which appear to be part of his costume) about six feet three inches; quite Herculean, and very clever. I took a very great liking to him, and was permitted to examine his workshop, in which I noticed a good barrel-organ, a baro-

meter, and several other articles of his own manufacture. He was kind enough to volunteer his services on one or two of our sick barometers, and succeeded effectually. Notwithstanding he only spoke Russian, of which I knew nothing, we managed to become great allies. He has since been promoted and gone home.

On their Sunday, all the officers of the establishment, civil as well as military, dine at the Governor's. During the week the military meet at the mess daily at one. The dinner is soon discussed. They reassemble at five, take tea, and remain until supper, at ten or eleven, during which interval cards or billiards occupy their time. The attentions of the Governor and his establishment were kind in the extreme.

The vessels in port were one ship, corvette-built, of four hundred and fifty tons, commanded by the Lieutenant-Governor, and two brigs commanded by a lieutenant and a master. They belong to the "Imperial Russo-American Fur Company," who are paid similarly to our troops employed in the service of the East India Company, retaining their rank, and their service time going on.

We visited several stations in the sound, in order to determine the position of Mount Edgecumbe, the Cape, Pouce, and some of the mountains in the sound, in prosecution of a projected survey; a party was also employed cutting wood (cypress) intended for the construction of a new whale-boat.

The chiefs having pestered the Governor to ask permission to visit the Sulphur, and glad on my part of an occasion to show that no unfriendly feeling kept them away, I immediately consented to a nomination of the best characters, amounting to thirty-seven, which, with the addition of the Russian officers and ourselves, would form a pretty large party.

They observed great ceremony in their approach, and were dressed in the most fantastic garb imaginable, being generally painted with scores of vermillion, in some instances not devoid of taste. Some had helmets of wood, carved in imitation of frogs, seals, fish, or birds' heads. Others wore the very sensible plain conical hat * without rim, which serves effectually to ward off sun or rain; and the generality wore, or carried with them, their native shawl, which is very laboriously worked into carpet figures, from the wool of some animal which I could not ascertain. One or two had cloaks of American sables, which were very handsome, but far inferior to those of Siberia.

Most of the helmet party wore ermine skins, tied loosely about them, which I found were *purchased* at the factory, and are imported from Siberia (via Ochotsk) *for traffic with the natives.*

I had an opportunity here, as well as at Port Etches, of viewing some of the skins, particularly the sea-otter, which they purchase from the natives, and

* Used by Mandarins in China.

was not a little surprised to find how completely they have arrived at their standard value, which is a very high price. A moderately good sea-otter skin will fetch from six to seven blankets, increasing to thirteen for the best; no bargain being conclusive without sundry nicknacks, similar to the Chinese *cumshaw*. These generally may be estimated at one blanket, which should be worth twelve shillings here. In money they frequently ask forty dollars; on the coast of California, at San Francisco, and Monterey, as much as eighty to a hundred.

When offering objects for sale, they are very sulky if their tender is not responded to; which in some measure accounts for the ill-humour experienced at Port Mulgrave, and which I am inclined to think would have terminated in hostility had I commenced purchases which could not have been followed up. Upon very mature consideration of what I have heard and seen respecting this subject, I think many of the unprovoked attacks we have heard of have originated in some transaction of this nature—refusal to trade being deemed almost a declaration of war. Facts, however, which have been acknowledged, prove that wanton malice has visited upon the next tribe the sins of their offending neighbours. This accounts for the two extremes we notice—extraordinary timidity when they are the weaker, and overbearing impertinence when they fancy themselves the more powerful party.

But to return to our party. The canoes were as

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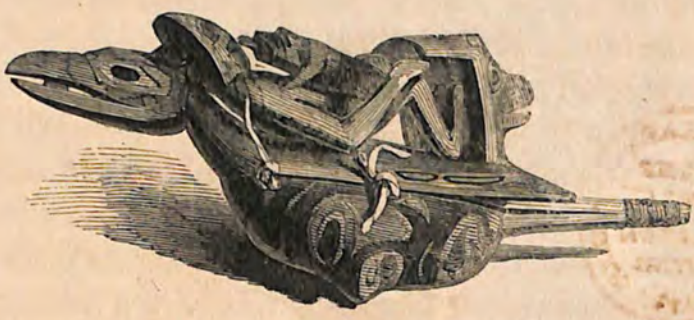
fantastic as their occupants, (for which vide sketch.) They were carved in grotesque figures, and remarkably well handled. After encircling the ship, singing, and gesticulating, as if she was to become a good prize, they at length came on board, and were severally presented by the Governor,—not omitting their *virtues* or *vice versâ*, when they possessed sufficient notoriety. I observed that those who had become (nominally) Christians were entitled to precedence, but no particular virtues were enumerated as their especial property.

A feast, as it is termed here, of rice and molasses,

NATIVE CHIEF OF SITKA.

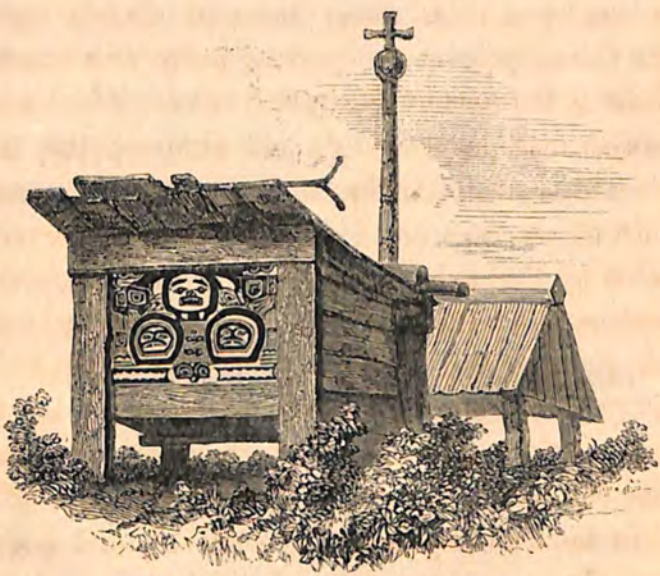
had been provided, on tables ranged on the main-deck. Instead of the proposed thirty-seven, I think one hundred might be nearer their number, After one good feed they were served with previously diluted grog; (mixed to Sitka proof, about four to one;) then a second dose of rice and molasses, followed by the grog, and then a third, finished that part of the meal; the ladies quietly bagging the remains in order, I presume, to prevent their soiling our main-deck. One or two ludicrous dances followed, to their own music,—a species of tambourine, clapping, yelling, &c., and a new musical instrument, composed of three hoops with a cross in the centre, the circum-



CASTANET.

ferences being closely strung with the beaks of the Alca arctica. This being held by the centre of the cross from below, and given a short vibratory motion, similar to the escapement of a watch, produced not a bad accompaniment.

I was heartily glad when they decamped, as they began to be noisy, wanted more *lumme* (rum,) and thought they had not been treated well,—being as yet *only* half-seas over, it was too apparent what a pest they might have turned out had I indulged them further!



TOMB.

Slavery exists throughout the tribes on this part of the American coast, and some facts related by the Governor evince the extent to which they are subservient to the caprices of their masters. If a chief wishes to insult another, he sacrifices to him a certain number of slaves. It would be loss of stamp if the opponent failed in despatching an equal

number, but generally a larger number answers the insult. This may continue until they have expended their stock, when they possibly come to personal attack, assisted by their allies of the tribe.

On the 26th of September, having completed our observations, we embarked the observatory, and moved down to the outer roads, in order to proceed to sea by a more direct channel. Before parting, the Governor gave an evening party and dance, to show us the female society of Sitka. The evening passed most delightfully; and although the ladies were almost self-taught, they acquitted themselves with all the ease, and I may add elegance, communicated by European instruction. Although few could converse with their partners, they still contrived to get through the dance without the slightest difficulty. Quadrilles and waltzing were kept up with great spirit, and I was not a little surprised to learn from our good friend and host, that many of the ladies then moving before us with easy and graceful air, had not an idea of dancing twelve months previous. I believe that the society is indebted principally to the Governor's elegant and accomplished lady for much of this polish.

This lady is of one of the first Russian families, and resembles the pictures of the empress. She accompanied her husband, enduring great hardships, through Siberia to Ochotsk on horseback or mules, in a most critical moment, in order to share with him the privations of this barbarous region. The lady of

Baron Wrangel, I think, was the first Russian lady who ventured so far.

The whole establishment appears to be rapidly on the advance, and at no distant period we may hear of a trip to Norfolk Sound (through America) as little more than a summer excursion.

On the 27th of September we parted from our friends with much regret, and to the latest moment experienced acts of kindness and attention. Our egress was by the direct or southern channel, which leads clear of dangers, and allows of free working room at a distance of three miles from the anchorage.

There are several remarkable hills in the sound which, in foggy weather, show their summits above all, and serve to help the navigator who has before seen them; but unless particularly inserted on the chart, they are of course useless.

Of these, Mount Edgecumbe, at the northern entrance, is three thousand one hundred and thirty feet above the sea-level, and is easily known by its denuded red stripes. The Pouce, immediately behind the arsenal, is three thousand four hundred feet, and indicates the direction to which the vessel must be pushed for anchorage before dark.

The Russian chart places a light on one of the rocks in the western channel, but this is incorrect. There is but one light, and that is on the citadel, and, unless a vessel makes her signal, will not be illuminated.

Two guns is the customary signal; and boats will come out to assist, the pilot coming off in one of them.

There are many rocks nearly even with the water's edge, which by daylight may easily be avoided, but the distinct channels are not easily discerned by a stranger, even when assisted by the Russian chart.

The late strong breezes had raised a heavy westerly swell, which caused us to make very poor work of it, and agitated our chronometers considerably. However, on the morning of October 3rd, we reached Woody Point, and at four the same evening, anchored in "Friendly Cove," Nootka Sound, the very interesting point of Cook and Vancouver's operations.

At first I doubted my senses, that so small a space could have occupied so much type, and until I had examined it myself in my boat, did not think it could afford shelter to two vessels. However, by placing one anchor outside, one well in, and the stream cable to the rocks, the Sulphur became well secure with the Starling within us. The greatest distance between any two points does not exceed a quarter of a mile, and mostly rocky.

The weather, during our stay, proved very unpropitious for astronomical observations, and beyond the absolute requisites for time and latitude, little was obtained, and that only after tediously watching for several days.

The Indians very shortly began to assemble about us in their canoes, offering fish; one in particular refused any return, and, from his appearance, and quiet,

MACQUILLA.

dignified behaviour, as well as the respect shown him by those in his own canoe, and in those around him, I was satisfied that he was above the common herd. There were others, of probably opposition tribes, who assumed more, and were more gaudily dressed, but I determined on giving my quiet friend the preference. He was invited on board, and I had the satisfaction of finding him to be no other

than Macquilla, the husband of the descendant of the Macquilla or Maquinna of Vancouver, (who states that he left his daughter his successor, and he probably assumed the name with his wife.)

He intimated that Wicán-án-ish stood first in repute, himself (Mack-quill-a) second, and Nook-á-mis third.

He was accompanied by his wife, a son, and daughter, who were evidently of the same breed as himself; much fairer and smoother-skinned than others of the race (or races) about us, and possessing rather prepossessing and agreeable features.

Vancouver's description of Maquinna's daughter would accord very well with the present, excepting that the young lady here introduced was yet but a child. Her features were, however, more of the Chinese or Tartar breed, than those of the brother. Her manner was very simple and winning; she had black expressive eyes; and her affection for her father, on whom she often clung, with her head reposed on his shoulder, was quite a novel sight amongst these people.

The son, as well as the daughter, appeared to receive all the respect due to high rank, even from the father, who invariably turned over his presents to them.

I treated them with rice, molasses, and very diluted rum and sugar, after the fashion at Sitka, which they appeared to enjoy; but the damsel

making very wry faces at the latter, wine was ordered; the father, however, anxious to taste everything offered her, evidently preferred the milder beverage.

After their repast, presents were given to them, and notice given to retire. This I found not so easily effected, the father and son remaining; and I was compelled to quit them, to pursue my duties on shore. I found them on my return still on board, and, from what I could ascertain from their signs, anxious to barter their furs. I endeavoured to make them comprehend that our supplies were not calculated for trade, nor beyond presents; that I expected no return; and further, that I would land in the evening, and show them fireworks, &c.

At dusk I landed, taking with me a magic-lanthorn and supply of fireworks. At the former they all exhibited the most unfeigned delight, to a degree quite outrageous; but at the ascent of the rockets, their impressions amounted to fear. I had several women grasping me by each hand, huddled into one groupe, and evidently trembling; and, by the light from the fire, I could perceive the tears rolling down the cheeks of Macquilla's wife and daughter, who fled to the bush the instant the fireworks were over; nor could they be persuaded to return, even to witness a second exhibition of the magic-lanthorn.

The excessive enjoyment of Macquilla was ridi-

culously displayed, by tearing the bushy hair of his particular friend or court-fool, but not so violently as to remove it by the roots.

On the day following, I still found the chief in bad humour, and at length he despatched his fool or first aid, to know whether I intended to trade or not, as he was about to proceed immediately to Tasheis, his residence, some miles up the sound, —Nootka being merely a fishing station.

Other natives observed in a marked manner, "Macquilla go to Tasheis;" I therefore presumed that declining to trade became an insult; and, as I wished to part on the best terms, I sent to assure him that I would see him again on board, the instant I had completed my observations. I accordinly did so, purchased several skins, and accompanied him to the beach, where I enjoyed myself about ten minutes, witnessing the effect of his speech, describing our uniforms which he had seen, as well as his treatment on board. At each pause a complete yell issued from his myrmidons, which at times was anything but pleasant. I suppose it meant "hear, hear," as amongst most cultivated assemblies elsewhere.

Macquilla is about fifty, five feet eight inches in height, his shoulders very square in proportion, and limbs exceedingly muscular. His countenance might assume any expression, from that of determined courage to that of the kindest and mildest feelings; but not of fierceness. His complexion is whiter

and smoother than usual. His superiority consists in a dignified, unobtrusive mildness of manner and deportment.

His son appears to be between twenty-three and twenty-five years of age, and stands about five feet nine inches; is fair, and possesses more knowledge than the father. His expression is mild.

The daughter is apparently about fourteen or fifteen years old, and, like all the females of the north-west coast, very short-limbed. Like her sex, she was desperately bent on ornaments, and had enough about her neck and wrists (although covered by her blanket) to set up a distinct trade. Unfortunately, I had none to bestow; Government, or Captain Beechey, not having considered the ladies of sufficient importance, to provide the presents necessary for their gratification. This is bad policy, as their first demand is invariably for presents for the wives and children; and if *they* are not gratified, we well know the result all the world over.

The dress of the natives differs much from those to the northward. Their cloaks, which are circular capes with a hole in the centre, edged with sea-otter skin, are constructed from the inner bark of the cypress. It turns the rain, is very soft and pliable, and is in use for mats, sails, ropes, clothing, &c.; the roofs of their houses are also covered with it.

They make use of the dried fucus giganteus, anointed with oil, for lines, in taking salmon and sea-otters. The hook is baited with a herring, which

abound on the coast, and are taken by a long comb with teeth about an inch asunder, and ten inches in length. This instrument is beaten into the shoal as the canoes glide over it, and as the operator feels it strike the fish, they are, by a slight inclination of the hand, turned into the canoe.

The sides of the bay are covered by salmon-stages in the summer season, when that fish is very abundant. Gooseberries, strawberries, and the whortleberry appear to be plentiful in summer, and probably the raspberry.

No vestige remains of the settlement noticed by Vancouver, nor could I discover on the site of the Spanish battery the slightest trace of stones employed for building. The chiefs pointed out where their houses stood, and where the potatoes grew, but not a trace remains of an European.

On my taking leave of them, the chief and his family exhibited much feeling; indeed, I was not without some slight share of it myself. I had become much interested about the party. Their general courtesy and freedom from importunity, daily present of ten salmon, and information rudely imparted, added to a very pressing invitation to visit them at Tasheis, had convinced me they were superior to any we had yet fallen in with, and that they deserved encouragement.

If the season had permitted, I certainly would have gone with them to Tasheis, and examined that part of the country, but time was precious, the bad

season had now arrived, and I much doubted even of the propriety of nearing, much more attempting to enter, the river Columbia.

On the morning of the 9th October, having completed our observations at Friendly Cove, Nootka, we sailed, intending to call off the mouth of the river Columbia, and if tranquil enter; but twenty-four hours after our departure, the weather proved boisterous, attended by a long westerly swell, which rendered it necessary to preserve our offing, and make the best of our way to San Francisco.

On the morning of the 19th October, we made Punta de los Reyes and the Farallones, the weather being beautifully fine, and the sea smooth; but the breeze throughout the day did not enable us to make much progress, and further tantalized us by springing up at sunset. Having closely surveyed the entrance to this port in 1827, I felt satisfied that it was safer and less harassing to our crew to enter by night, than to remain outside, subject to sudden bad weather, as well as the chance of drifting on the bar, where a very unpleasant swell prevails with the ebb.

About nine we entered the heads, and shortly after midnight, as the moon cleared the eastern hills, we dropped anchor in Yerba Buena Bay. We were fortunate in having entered, as it presently blew half a gale, and the Starling outside experienced very unpleasant weather.

CHAPTER V.

Changes since 1828—Result of revolution—Delawares—Visit Santa Clara—Decay of the mission—Examine Sacramento—Meet Indian hunters — Reach Point Victoria — Commence survey of river—Short of provisions—Grotesque dresses of Indians—Decrease of population — Animals—Climate—Productions—Scenery of river—Scarcity of provisions—Rejoin Starling—Insecure state of the country—Renegadoes—Quit San Franciso—Anchor at Monterey—State of its defences—Quit Monterey — Pass Cape San Lucas — Touch at Tres Marias—Reach San Blas.

CHAPTER V.

At daylight I was anxious to take a peep at our old ground, and was much surprised to find everything going to decay, and infinitely worse than we found them ten years before.

Of the revolution, of which we heard much and expected more, not a trace could be observed; it was a sore subject, and (as it resulted) they were evidently aware of their inability to govern themselves: no one stepped forward to attempt it, and they quietly fell back under the Mexican yoke. Another fate attends this country; their hour is fast approaching; harassed on all sides by Indians, who are now stripping them of their horses, without which their cattle are not to be preserved; pestered by a set of renegado deserters from whalers and merchant ships, who start by dozens, and will eventually form themselves into a bandit gang, and domineer over them; unable, from want of spirit, to protect themselves; they will soon dwindle into insignificance. As a proof of their apathy or help-

lessness, a party of Delaware Indians, or American hunters, had a permit from the Governor to hunt for furs "in the back country." Their time being expired, the chief returned, but the remainder, having appointed a new head, are now carrying on land-piracy throughout the state. In open day they rode to the mission of St. Luis, and took from the "*corral*" all the horses belonging to the mission, (said to be a thousand!) desiring the administrador to keep clear of rifle range.

Having a special introduction to the Padre Presidente of the mission residing at Santa Clara, I set out, accompanied by Lieutenant Kellett and our surgeon, to visit him; hoping to obtain the necessary table supplies from the missions, instead of taking our chance at the beach. After much toil, and a night spent in the marshes by the fault of a bad pilot, we reached Santa Clara to breakfast, but were miserably disappointed, the padre being absent at San Josef. The mission is fast falling to decay, and scarcely common civility was shown to us.

Lately, all the missions have been transferred into the hands of administradores, who, under the new law, take about two-thirds to themselves, and *account for* the remaining third to government. The consequence is, that the Indians are robbed; they do nothing but rob when they can, run away to escape punishment, and then form themselves into gangs, and set their masters at defiance. The missions, the only respectable establishments in this

country, are thus annihilated; they have been virtually plundered by all parties.

These were the only places of resort for travellers throughout California, and even in their palmy times were only tolerable; but now a meal cannot be procured without difficulty, and travellers must rely upon their own resources.

On my return to the ship, I started with the Starling, pinnace, two cutters, and two gigs, to explore the navigable limit of the Rio Sacramento; one of three streams, diverging about thirty miles up the north-western arm of Estrecho Karquines, where the Blossom's survey terminated.

At dawn, on the 24th of October, we started, and carried the Starling thirty-six miles. On the 26th, the pilot assuring us that she could not be carried further, we stored our boats with as much provision as they could stow, and moved on. We soon found our pilot mistaken, but it was now too late, our measures were taken, and several boats twenty miles in advance. With a most beautiful day we advanced, touching at particular spots for astronomical stations. Ducks and geese were noticed in great numbers; also elk and deer, in herds of twenty and thirty; but there was no time for delay.

From former descriptions of the river, I was greatly disappointed at not meeting with either the San Joachim or Jesus Maria, equally large streams, said to trifurcate north and south with the Sacramento. These streams may possibly be found upon

a closer examination, but no such idea is conveyed, even to the inquisitive observer, on entering the mouth of the Sacramento, which becomes a narrow stream about twenty miles above the position where we left the Starling; the intermediate extensive sheet of water forming a great archipelago. As our entry was on the northern edge of this archipelago, we were satisfied that no great river ran in the direction of or behind "Elk Range;" the two streams, if they fork here, must be southerly.

On our left the high range of the Montes Diavolo, as well as Elk range, appeared to bound the limits of water. On our right the range of the Sierras Bolbones was visible, equally from the sea as from the source of the Sacramento. All the intermediate space in the rainy season may be under water, and at such a period, the trifurcation may possibly be apparent; but our guide appeared quite as much in the dark as ourselves, and could not afford any satisfactory explanation.

This guide was one of those trained in former days to *hunt for Christians!* * and frequently, on being pressed upon a subject of which he really knew nothing, would reply, "I only know where to find the Indians."

As these Indians were sought for in streams which flowed *southerly* of the Bolbones, and at the

* Boats with soldiers were sent under the direction of the padres to capture Indians and bring them to the missions, where they were made Christians *nolens volens*.

back of the range, behind San Josef, the San Joachim probably flows in that direction, branching off at the archipelago near the entrance of the Sacramento, but certainly not navigable, nor entitled to be named as a river in conjunction with its majestic neighbour.

Having entered the Sacramento, we soon found that it increased in width as we advanced, and at our noon station of the second day was about one-third of a mile wide. The marshy land now gave way to firm ground, preserving its level in a most remarkable manner, succeeded by banks well wooded with oak, planes, ash, willow, chesnut, walnut, poplar, and brushwood. Wild grapes in great abundance overhung the lower trees, clustering to the river, at times completely overpowering the trees on which they climbed, and producing beautiful varieties of tint. All our efforts were directed to reach the head of the stream without delay, stopping only at nine A. M., noon, and three P. M., for astronomical stations. As my boat was swift, these short delays afforded rest to the men, and we very soon overtook those in advance.

About half way up we observed Indians on our right, but were soon apprised of their friendship by our guide, who brought their pass from the General Vallejo, "to absent themselves from the mission of San José, in order to make treaties with the natives or wild Indians;" or in other terms, to make trade for peltry, &c. Two of these volunteering to join

our party, and hoping through them to get into communication with others, by whom we might be supplied with venison, &c., we willingly took them into the boats.

On the 30th, about four P. M., we found the deep boats stopped at a point where the river forked. Lieutenant Kellett was despatched to examine the main stream, but returned without having passed out of sight, reporting "no water for our lightest boats." The natives also assured us that this was the ford where the hunters cross.

I landed at "the Fork," which was named Point Victoria, and found the natives had but shortly fled, leaving a large stock of acorns, and all their provisions, fires, &c., behind.

Every experiment was resorted to in order to get an answer from them. The natives who accompanied us called loud enough, and doubtless they were close to us ambushed, but afraid to reply. I therefore attached a knife, some tobacco, and beads, and left them to be picked up when the natives returned. On the following morning I perceived them crouching in the grass. One had a metal band on his brow, through which some feathers were passed. They were not clothed, and appeared a wretched-looking race. They disregarded every overture made to them by our two Indians, whom I directed to go full in their front on the opposite bank, (about pistol-shot across,) and endeavour to arouse them. With my telescope I could observe

them wave the hand slowly to indicate their disinclination, and therefore gave up all further hope of friendly communication. Before quitting, I left other presents; and our interpreting friends were very anxious to exhibit their generosity, by easing them of bags of acorns, &c., and were much disconcerted at my refusal to sanction their exploits. They were termed the Wallock tribe by our Indians.

Our extreme position having been satisfactorily determined by astronomical observations, and true bearing of the Sierras Bolbones, the more arduous part of our duty commenced, viz. the trigonometrical survey from hence to the junction with the Blossom's Survey at the mouth of the San Pablo.

By these observations Point Victoria was found to be in latitude 38° 46′ 47″ north, longitude 0° 47′ 31″5 east of the observatory on Yerba Buena; traversing in its meanderings about one hundred and fifty miles.

Throughout the whole extent, from Elk station to the Sacramento mouth, the country is one immense flat, bounded in the distance N.W. by Sierras Diavolo, W. Sierras Bolbones, and E.N.E. to E.S.E. by the Sierras Nievadas, from whence no doubt this river springs, and rises in proportion to the rains and thaws. Our course lay between banks, varying from twenty to thirty feet above the river-level, apparently, from its strata, of differently composed clay and loose earth, produced by some great alluvial deposit. Sand did occur at times, but not a rock or

pebble varied the sameness of the banks. These were, for the most part, belted with willow, ash, oak, or plane, (platanus occidentalis,) which latter, of immense size, overhung the stream, without apparently a sufficient hold in the soil to support them, so much had the force of the stream denuded their roots.

Within, and at the verge of the banks, oaks of immense size were plentiful. These appeared to form a band on each side, about three hundred yards in depth, and within (on the immense park-like extent, which we generally explored when landing for positions) they were to be seen disposed in clumps, which served to relieve the eye, wandering over what might otherwise be described as one level plain or sea of grass. Several of these oaks were examined, and some of the smaller felled. The two most remarkable measured respectively twenty-seven feet and nineteen feet in circumference, at three feet above ground. The latter rose perpendicularly at a (computed) height of sixty feet before expanding its branches, and was truly a noble sight.

All the trees and roots on the banks afford unequivocal proofs of the power of the flood-streams, the mud line on a tree we measured exhibiting a rise of ten feet above the present level, and that of recent date.

At the period of our examination the river was probably at its lowest, and much less than I had anticipated in regard to strength, being at times

almost still water; and yet up to our highest position the Sulphur might have been warped or towed by a steamer. During the rainy season, which commences about the middle of November, and terminates about the end of February, the river is said to overflow its banks, when its impetuosity is such that navigation (for the craft of this country I suppose) is then impossible. The annual rains do not, however, of necessity inundate these low lands, but in severe seasons, after heavy falls of snow, they produce one immense sea, leaving only the few scattered eminences which art or nature have produced, as so many islets or spots of refuge.

Upon these spots the tribes who inhabit these low lands are frequently compelled to seek shelter, principally, however, on those artificially constructed, —as all were which we examined. They consist merely of a rounded pile, raised about fifteen feet at the apex above the surrounding level; the space from which the earth is removed forming a ditch to carry off the superfluous water.

Our pilot termed them Rancherias, (as they also do any place to which the natives resort,) and assured us that each was the separate property of a distinct tribe. None exceed one hundred yards in diameter; and confined within such a compass, it is fearful to contemplate the ravages which disease must make in an inclement season, or the misery which the survivors must endure thus pent up with the dead and dying.

Lately, fever and ague carried off whole tribes; and the spots they had thus so carefully reared, were but their own tombs! On one of these I had fixed a station, and on digging to insert the post, the parts of a skeleton, with hair perfect, mixed with ashes, were turned up. It is, therefore, probable that they burn their dead, to destroy the animal matter, and prevent contagion. This Rancheria was assigned by our pilot (an Indian) to the Onēē-shăn-á-tēē tribe; but as he appeared to name every tribe below Point Victoria (where they are Wallocks) by the same appellation, I am induced to attach little importance to his nomenclature, as I have been since informed that they keep to the left bank.

At a position nearer Point Victoria where no mound was apparent, many entire skeletons were scattered about, above ground; which probably may have resulted from the mortality before alluded to (a few years since) having cut them off before they could reach their Rancheria. My first impression was, that some great battle had been fought, and that their dead had been left. But this is not customary, and they would not have been left so complete by birds or beasts of prey. As these skeletons appeared less disturbed, it is probable that at these seasons of inundation, birds and beasts retire to the mountains or wooded elevations.

On our passage down, we visited the Indians whom we had found encamped. They were also of

the Onēē-shăn-á-tēē tribe, and were evidently prepared to receive us in better humour.

They appeared as if they had just returned from plundering the dresses of a theatre, being *partially* clothed in shirts, jackets, trousers, &c; in many instances wearing but half of one of the articles; the effect of which, in the case of trousers, was ridiculous in the extreme. Those who could not sport these grotesque dresses, were fancifully decorated with those pigments which wood fires produce, and which, when nearly dry, was scored off, thus displaying skeletons, tatoos, &c; some indeed exhibited the new patterns of fancy shirts very admirably imitated. The generality, however, were very disgusting.

The first party were without implements of any kind, and probably came on a visit of ceremony, as the spokesman, who was one of our interpreters before alluded to, came to inform me that he had put some fish on board of the boats. Lower down the river, I visited them at their Rancheria, and there had an opportunity of observing them more minutely. Some of the women were clad in cloaks made from the skins of a slate-coloured duck we had not yet seen, (either now or in 1827,) which presented a very neat appearance. All sexes and ages were collected, and all busily employed,—the women pounding and making acorn-bread, boiling huge horse-chesnuts, &c, the men forming arrows.

The only apparent formation of a hut beneath the trees, which were their only shelter from the sun, was a kind of partition formed of folding mats. Some bore the marks of tatoo; but this was not common, and was probably a mission taste.

Their general appearance was that of extreme misery and filthiness; and much as I wished to see the completion of one of their arrows then in progress, I was glad to breathe the open air, and free myself from such company. Some of our party induced the hunting set to exhibit their skill with the bow; but they were far from expert. Their implements were but few, and of the simplest kind, —similar, indeed, to those observed at Point Victoria, and probably constructed on the spot, to prevent the labour of conveyance.

They are migratory, and were generally traced by us to have fixed their temporary sojourn under a horse-chesnut, or in the immediate vicinity of acorn grouuds. It is probable that they continue travelling and amassing their stock until winter, and then betake themselves to the high grounds or the Rancherias. As habit is second nature, and all these tribes, including all I have seen at the missions, appear of the most degraded class, it is probable that they prefer the latter, (" De gustibus, &c.,) where possibly their friends the ducks and geese, visit them occasionally. Possibly, also, the deer may drop in on them. But the chances are miserably poor, in case of inundation.

The river abounds in fish and muscles, which they take in great quantity; but I suspect they are not sufficiently skilful to capture those of larger dimensions, which we noticed incessantly leaping; probably sturgeon, or a fish resembling it very closely.

Elk and deer were tolerably plentiful; the former are easily taken, and the profusion of antlers found at the Rancherias prove their capture in fair quantity.

The pilot, a native, converted and retained by the mission, informed us that the banks throughout our whole route were once thickly studded with these Rancherias, and with natives to possess them. They are now nearly extinct, and individuals of the tribes are only to be found in the mission.

Let not theorists too eagerly advance the opinion, that the introduction of foreigners depopulates whole tracts. A higher power has operated here.

It is probable that the hunters and Delawares which frequent these grounds, may have in some measure caused them to shift their ground. It is also known that they have most valorously contended even against the rifle, and suffered slaughter rather than retreat, generally severely and fatally wounding their adversaries. These are traditions. Of the mortal sickness which scourged the Columbia and its tribes, as far south as the Colorado in one year, and even penetrated to the rocky mountains, we have the most perfect evidence. The later visitation of

the small-pox probably was communicated by an American or Canadian.

The Sacramento was once famed for its beaver and land-otter. They are not scarce at present, but our mission Indians were anxious to induce us to become purchasers of furs which would certainly be termed *refuse* to the northward.

The climate by day was mild, ranging from 41° to 77°. On one occasion on shore at night it fell as low as 36°. The water ranged from 53° to 56°. Slight rain was experienced on two days, but the weather generally was extremely fine.

Our collection was enriched by some very beautiful ducks, owls, hawks, and other birds, which abounded on the banks. Of four-footed animals few were killed. Cuyote or jackal-fox, racoon, land-otter, weasel, and squirrel, were obtained. I fired twice at small tigers or tiger-cats, but they were too thickly clad for small shot to make any impression. The party succeeded in taking an elk and a deer, and killing a great quantity of wild geese.

Near the mouth of the river the soil is entirely peaty; so much so, that it was very difficult to use the artificial horizon, particularly on the ebb or flood-tides. The spring-tides overflow all the lower lands, which are well stored with long flag grass, and rushes of great size, of which latter the natives construct their balsas. The ground does not assume a substantial bearing until the flood is overcome by the fresh water; and there the soil is of the finest

kind. Roses, arbutus, and other small shrubs flourish luxuriantly, and wild grain produces and re-sows itself, affording perpetual pasturage to the deer, &c. During the dry season the natives burn this down, and probably by such means destroy many oak plantations which otherwise would flourish.

The oak of California does not bear a high character, although it is the same as that used generally on the eastern coast of America, about the same parallel.

The ash is excellent, but does not attain any great size. Wild grapes generally prefer it, and the varied colours of the dark-green leaves, added to the brown tints of the decaying leaves of the vine, produce, on rounding the different bends of the river, very beautiful contrasts at this season. Our friend the plane, however, will not be eclipsed.

The timber of this tree is solid, and does not swim; when green it seasons well, and I found it made good gunwales and timbers for light boats. Laurel, varieties of oak, sumach, pine, &c., we noticed; also the bulbous root termed *ammoles* by the Spaniards, and generally used as a detergent in washing. It is roasted, and used by the natives as food. It has a sweetish taste.

The grapes were abundant and well-tasted, but small in size and large in seed, therefore not very great luxuries. Some of the acorns were as sweet as chesnuts. The fruits of the hiccory and walnut we occasionally met with, and not having better, we

thought them excellent; but the shells being very thick, and the fruit small, they were as little prized as the grapes.

About twenty miles above the Starling's anchorage we found the water perfectly sweet; we therefore became not only relieved of the weight of this necessary article, but were enabled to luxuriate in draughts of the purest we had tasted for many weary months. To seamen such a luxury seldom occurs, and it is one a landsman can scarcely appreciate. I suspect, however, that the waters of the Sacramento would obtain their preference over all others.

It was otherwise, however, with solid provision. Of this we very soon fell short; and the nature of our duties prevented our seeking assistance with our guns. Twice we were compelled to despatch a boat for fresh supplies, and on each occasion were reduced to a much lower ebb than was either convenient or pleasant. Yet all was cheerfully submitted to, with the exception of one or two bad characters, who were sent to luxuriate on board the ship, as a punishment. They very soon wished themselves on the *bad fare*, as they termed it.

One boat had hardly quitted us before she fell in with a deer bathing, and to prevent the possibility of losing a regale, they put about ten balls into his head. They did not bring him back to us; time was too precious. They killed an elk near the

Starling, but by the blow of an oar. Of him we tasted, but it was coarse meat.

The soil on the banks is generally a loose mixture of sand and clay, entirely alluvial. The bottom varies, from very loose mud to stiff red clay, and occasionally a very quick sand. Two varieties of mytilus and some univalves were obtained.

As we neared the actual mouth of the Sacramento, we were rather more minute in our examination of the creeks, but found nothing to change in our former opinions. On the 18th November we sighted the Starling, and having carried the triangulation up to her nearest position, before sunset had the satisfaction, after twenty-three days confinement in the boats, of again luxuriating in a wholesome bed. As the work of each day was entirely completed on paper before we retired to rest, (sometimes at four A. M.) the *severe* part of our labours was here ended.

It was my intention to have waited a couple of days at this position, and afforded the party amusement in shooting geese, ducks, elk, and deer, which were in great abundance. But as the Starling's provisions had been forwarded to us, and we had barely sufficient to carry us down, this was necessarily abandoned; although in the course of our operations we were not idle at this work, particularly about sunset; generally bagging our eight or ten heavy geese for the ensuing day. On one excursion the assistant-surgeon of the Starling killed

forty-eight geese and eight ducks; at another several elk and deer were wounded; and when our ammunition was expended, a whole herd of elk passed me within ten yards.

Having completed our connexion with the Blossom's Survey up to Yerba Buena, we reached the Sulphur on the 24th November; having been absent altogether on this interesting but harassing service thirty-one days.

As far as navigation is concerned, the Sacramento affords every facility for small craft as high up as the "Fork;" but I cannot at present perceive any advantage to be derived from taking large vessels above the Starling's position, or even above the creek at the mouth of the Estrecho Karquines, which communicates with the mission of San José, and which, until settlements are made above, will be the extent of traffic, excepting for timber.

Taking into consideration the whole port of San Francisco, the Sacramento, and minor streams, there is immense field for capital, if the government could protect its citizens or those inclined to reside. At this moment (December, 1837) they are reduced to almost their extreme gasp; harassed by their own servants (who are natives) deserting and carrying off their property; threatened by the Delawares, who have piratically ranged the country, taking away horses and cattle; disturbed by their late *declaration* and *recantation* of independence; they sadly want the interposition of some powerful friend

to rescue them. To Great Britain their hopes are directed; why, I cannot learn, but I am much inclined to think that it is rather from a pusillanimous fear, and want of energy to stand by each other and expel their common enemies, than from any friendly feeling to Great Britain.

Besides this, they look with some apprehension upon a power daily increasing in importance—an organised independent band of deserters from American and English whalers, who prefer a roving careless life on horseback, and certainty of food without labour, to the customary hardships of their vocation. These men, headed by one or two noted daring characters now amongst them, will, whenever it suits their purpose, dictate their own terms and set all law at defiance. It is distressing to witness the downfall of this splendid port, all the forts in ruins, not even a signal-gun mounted! Such are the blessings of revolution!

During my absence, the serjeant and corporal of marines, carpenter's mate, and several men and boys, had deserted; seduced, it is supposed, by promises of independence, high pay, promotion, &c. All our efforts to trace them were unavailing. We had strong suspicions that they were concealed by a person heading the mountain gang, (a discharged midshipman,) particularly as the serjeant had been his shipmate before, and he had visited the ship about that period.

Nothing further detaining us here, we embarked

the observatory; and on the 30th November took our departure for Monterey, where we arrived on the 2nd December. Here I found my old friend, Mr. Jones, (the American consul to the Sandwich Islands,) who had visited the coast on a matrimonial expedition. As he had just purchased the wreck of an American whaler, which had been driven on the beach, a week since, during a heavy gale, we were fortunate enough to obtain from him a very seasonable supply of beef, pork, flour, and biscuits; of course at a pretty high price. The French frigate, La Venus, our old consort at the Sandwich Islands, had quitted but a few days before, and proceeded to San Blas.

No one should calculate on supplies beyond those immediately connected with present consumption, in any port of California. Bullocks, sheep, and vegetables, (particularly potatoes,) with a few fowls and fruit, are all that can be looked for, and these are of moderate price. All these are much inferior in quality, and fruit is particularly scarce since the destruction of the missions. At San Francisco fine fat bullocks, weighing from four to five hundred pounds, hide included, were purchased at five dollars each, sheep two dollars.

I am perfectly satisfied that beef could be as well cured here on the farms, if proper precautions and good materials were used, as in other parts of the world. Individually I have proved it to the extent of one bullock. I think it would keep sound for

two years; but from the wild state of the animals when *dragged* to the port, the blood is too much excited to allow of fair trial. Beef in these climates requires more sugar and nitre than in colder regions.

Monterey I found as much increased as San Francisco had fallen into ruin. It was still, however, very miserable, and wanting in the military air of 1827. The adobe or mud-brick battery remained, and had been newly bedaubed during the late ebullition of independence. There were guns it is true, (about seven,) but they were in a state infinitely more dangerous to those using them, than to those against whom they might have been used. An Englishman was found possessing sufficient courage to fire *one* at the crisis of the revolution. That gun decided the question!

Yet I find in the restrictions enjoined on poor Douglas that he was in honour bound "to desist from entering or *taking plans of the fortifications!*" which consisted of a mud wall of three sides, open in the rear, with breastwork about three feet in height; with rotten platforms for seven guns, the discharge of which would annihilate their remains of carriages. The muzzles of one or two brass twenty-four pounders, very old and very handsome, are *absent*, and their vents might, upon an emergency, be used to load, provided it became necessary to make a *second* effort to discharge the shot, as I have once witnessed. The visit of La Venus had stripped the place of most of the supplies of which we stood in need.

The governor was in daily expectation of being superseded by a Mexican appointment; but it was not *quite* certain that he would resign his honours without giving some trouble. The affairs of California were not yet finally arranged. Commissioners had gone to Mexico, via Acapulco, in order to come to some definitive arrangement.

On the 6th December we quitted Monterey for San Blas, whither I had already despatched the Starling to obtain our letters; the distance to Tepic, where our vice-consul, Mr. Baron, resides, causing a delay of forty-eight hours.

A very severe bilious fever confined me to my cot for some days, and prevented my examining the island of Guadalupe, and searching for others said to exist.

On the 11th December we passed close to Guadalupe, and thence explored a degree on the parallel where an island had been lately reported, but without success, thence southerly, to fall into the parallel of Shelvoes, Shelvocke's, or Shovel Island; steering easterly towards Cape San Lucas, until I had sufficiently determined its non-existence within thirty miles east or west of its assigned position.

The Venus also went over the same ground on nearly the same errand, and with like success.

On the 16th December we passed Cape San Lucas within about half a mile of the rocks, looking into the bay preparatory to a future examination, and passed on for Tres Marias, off which we perceived the Starling on the 18th of December.

On the day following we landed on the Northern Maria, and obtained sights; but disliking the anchorage, stood away and anchored off the centre of George Island, where we procured wood, surveyed the bay, and fixed its position. We then quitted for San Blas.

There is nothing inviting on either of the Marias. In the rainy season water may flow, but from what I witnessed of the channels through which it must pass, they should be well cleansed by floods before it would be fit for consumption. What remained in the natural tanks was sulphureous; brackish, although far above the influence of the sea; and formed a strong infusion of decayed leaves.

By the tracks observed, turtle appeared to have visited the island lately, but none were seen or taken. Wood is plentiful, particularly a species of lignum vitæ. Cedar of the coarse species used for canoes we met with, but none of fine grain.

Firs are probably in the mountains, as I found a cone in one of the water-courses. The other trees are similar to those found at San Blas.

The soil is chiefly composed of a sandy mud, similar to that discharged from volcanoes, and which in some cases assists in forming an amygdaloidal stratum, of which the cliffs and water-courses, especially on the northern island, are chiefly composed.

On George's Island the water-courses were of this nature, with large boulders of greenstone. On the eastern point a small delta of low land occurs, which

has coral sand for its substratum, skinned over with a covering of mud and soil, on which rank grass luxuriates.

Fish appear to be numerous, particularly sharks; and the dead shells on the beach, including almost every known species in these seas, hold out a prospect of employment for the conchologist.

But the capricious character of the ocean about these islands renders visits at any time hazardous, as a few moments may imprison the naturalist for weeks. Ten years since, nearly to a day, I found landing on any part of these shores impracticable, although the weather previously had been fine.

Here Vancouver tried ineffectually for water, and I was induced, by the assertion of a master of a vessel belonging to San Blas, "that wells were sunk, and good water conveniently to be had," to make this examination. It is not improbable that if wells were sunk, water could be obtained; but is the result worth the trouble or risk?

On the 20th of December we anchored off San Blas, and found no letters; that dreadful damper after long-cherished expectation, and particularly on such a service as the present, where year after year fate may send them without a chance of reaching us.

CHAPTER VI.

Official news of the accession of Queen Victoria—Arrival of Venus—Scurvy—Starling despatched to Panama for letters—Quit San Blas—Arrive at Acapulco—Entering by Boca Chica—Interview with the Governor—Erect observatory—Examine the port—Capacity—Best berth—Watering place—Present state of trade—Merchants deserting the city in consequence of custom-house regulations—Earthquakes from 1732 to present date—Fort San Carlos not affected by them—Period of rainy season—Distance from Mexico—Imports, exports, and general trade—Population and diseases—Military force—Execution of two murderers—Unsafe at night—Quit Acapulco—Touch at Guatulco, and fix position of Morro Ayuca—Cross Gulf of Tehuantepec—Views of volcanic peaks—Call at Sonsonati and Libertad—Volcano of Isalco active—Anchor at Realejo.

CHAPTER VI.

By the kindness of my excellent friend, Mr. Barron, a large packet of newspapers, affording us the official intelligence of the accession of our Maiden Queen, Victoria, was immediately on our arrival despatched to us, with dates to September.

On the 21st of December the Venus arrived from Mazatlan, when we had the satisfaction of renewing our acquaintance with our French friends. I found from Captain du Petit Thouars, that he had been successful in his examination of the coast of California, and had surveyed the Bay of Magdalena, rounded Cape San Lucas, and proceeded to Mazatlan in the vain hope of obtaining supplies. Here he was equally unsuccessful, excepting in flour, of which he obtained forty barrels at a very exorbitant price. Many of his crew being ill with scurvy, which I believe first made its appearance at Kamtschatka, he determined on proceeding immediately to Acapulco, and landing them until recovered, and

thence proceeding on to Callao or Valparaiso for provisions, of which he stood much in need. Wine in particular he had not been able to obtain, nor had we at this time spirits for our crew. The duties here on imports are so exorbitant, that they amount almost to an entire prohibition. At California sixty dollars were demanded for fifteen imperial gallons of indifferent rum, and no doubt at San Blas or Acapulco not under twenty would have been asked.

On the 28th of December I despatched the Starling to Panama, to obtain any letters, officers, or despatches which might arrive for us, and to rejoin us at our rendezvous, Realejo. We remained until the 5th of January for the last mail, but nothing arriving for the Sulphur, we bore away for Acapulco. Unfortunately we were drifted outside the land and sea breeze limits, and did not reach it until the evening of the 12th of January.

We made the high paps of Coyuca to the westward of Acapulco, but I cannot persuade myself that they are good landmarks for making the port. In the offing they may be useful *if not obscured.*

Acapulco may be approached from the southward or westward, by keeping the western cone open of the land, which will lead up to the Boca Chica entrance, or until Acapulco port is so close under the lee, that no further marks are necessary. There is not *any hidden* danger in the entrance to Acapulco. Keep a moderate distance from either shore, five

fathoms will be found alongside all the rocks, and twenty-five to thirty in mid-channel. Round Point Grifo *sharp*, rather than stand over to San Lorenzo, as the wind, generally westerly, heads on that shore. If working, tack when the rocks on the south point of Town Bay show in the *gap*.

The two best berths are off the rocks alluded to; that outside is preferable, but in either case let the outer rock bear W.S.W. or W.N.W., so that a hawser fast to the rock may keep your broadside to land or sea breezes, and prevent a foul anchor.

The breeze barely carried us to the Boca Chica by sunset, which made me determine on taking that channel in preference to the chances of calm or other delay by rounding the island. Fortunately we succeeded in rounding Point Grifo by dark, and beat up to our anchorage before eight, passing under the stern of our old friend Venus, who kindly sent immediate offers of any aid we might require.

On calling upon Captain Thouars, I found he had also been tantalized by calms, had seen the Starling off the port, and had only been four days before us.

On the following morning I waited on the Governor, who in the most civil manner offered me every facility in erecting the observatory, or in any other matter where his services could be available. He appears to be a complete military character, preserves strict discipline, and is much esteemed.

The Venus, after some trifling difficulties with

the authorities, landed her invalids, and established an hospital in a house hired for that purpose. Her astronomical and other observations were conducted at the south extremity of the town beach, on a spot inaccessible to land or sea breeze.

During our stay we re-surveyed the port, and corrected several errors which were said to exist, particularly one of three and a half fathoms in the fairway; upon which, however, eight and a half were found by the lead. It must therefore be an error in figure.

The harbour of Acapulco has long been reckoned, for its size, one of the most complete in the world. It affords sheltered land-locked anchorage of sixteen fathoms and under, in a surface of one mile square; which, allowing for moorings, would, at half a cable range, or one cable asunder, accommodate one hundred sail of vessels, even of the line. The bottom is sandy at its surface, but clayey beneath, and holds well.

It would naturally be inferred that, surrounded on its north and east sides by mountains ranging from two thousand, to two thousand seven hundred feet, and by others of three to five hundred feet on the west, the breeze would scarcely be felt, and the heat be intolerable. This is confined to the town limits; at our observatory, and at the port, San Carlos, we enjoyed a constant breeze.

In all harbours there may be objectionable berths, but in that of Acapulco, if care be taken to keep in

the line of what I have designated the "west gap" or neck of the peninsula, open of the south point of the town bay, both land and sea breezes will be felt in their full strength, and free from causes which would heat them before entering the port; the neck being but a few feet above the sea-level.

Water of good quality was found at several points between the fort and Obispo rock; but the two best streams are between the fort and San Lorenzo.

The market, owing to the decay of the respectable portion of its inhabitants, is but indifferently supplied, but fowls, fruit, and vegetables, are readily obtained. The very great mistake committed in 1827, by the expulsion of the old Spaniards, has ruined every port on this side of Mexico, and the vexatious system of carrying into effect the Custom House regulations will utterly ruin its commerce, if this has not been already achieved.

Only two European residents remain, (Germans,) and a few months will in all probability induce them to select some other port *under the same laws*, but more justly and favourably administered. During our visit, a French brig from Lima actually entered the port, and, much to the chagrin of the officials, who were contemplating their "pickings," without a moment's delay tacked and put to sea,—her consignees having ordered her to San Blas, where proceedings are less vexatious. She was consigned to merchants in Mexico, and as the instructions came from Mexico, in anticipation of her arrival, they

must be aware in that city of the state of affairs here. The circumstance appeared to afford matter of great amusement to the merchants, and I suspect that the presence of the Venus saved a little vexatious conduct, had a boat from the authorities reached her.

Acapulco from its earliest days has been famed as the resort of the galleons from Manilla,—the last, I believe, having entered in 1793—4. This, of course, caused many wealthy Spaniards to settle as agents for houses in Mexico, and until the edict in 1827, requiring all old Spaniards to quit the territory, which was carried into effect in a truly bandit style by Montesdeosca, it continued to flourish.

That edict, like a blight, annihilated the germs of high breeding; the Spaniards fled, half castes stepped in to represent society, and decay has followed with rapid strides, until the place is now merely a wreck of its former opulence. Nature, indeed, has not stood idly by, but has added her full share of miseries, as a further inducement to desert this almost doomed city.

As far back as the year 1732 earthquakes of uncommon force have continued to afflict this city. It is recorded that on the 25th of February of that year a very heavy earthquake destroyed nearly the whole town: the sea rose to a great height, covering the Plaza (or about ten feet perpendicular;) the successive risings, after receding, recurring slowly at the periods of the several shocks.

On the 17th of August, 1754, another earthquake occurred, ruining the greater part of the town. On this occasion the rising of the sea was attended with more violence; the Plaza was again covered.

On the 21st of April, 1776, an earthquake occurred which destroyed many houses.

On the 14th of March, 1787, the whole town was ruined. The sea retired, leaving the rocks of the Punta Manzanilla (in the town bay) dry. The Phillippine, Nao, was anchored at the time in the port, and was left in four fathoms before the tide returned,—showing a fall of thirty-six feet.

No earthquake of consequence is recorded afterwards until that of the 2nd of May, 1820. This earthquake lasted several days, and entirely destroyed the place. The steeple of San Francisco fell on this occasion, and the church was rent; the sea retired still further than in 1787, and returned in two hours, rising up to the church door; the rise and fall taking place gently. At the ultimate recession the sand was found to have accumulated so as to nearly cover the pier, (five or six feet,) by which upwards of twenty varas of land was gained at the beach.

On the 10th of March, 1833, about ten o'clock at night, a heavy earthquake was experienced. The sea retired forty feet, and gently resumed its former level. This was felt at Mexico at precisely the same hour, lasting there about one minute and a

half, the motion there being *undulatory*, but at Acapulco *trepidatory*.

On March 13th, 1834, another shock is recorded; the sea receded fifty varas, and several buildings were destroyed.

On the 6th of January, 1835, at six in the morning, a very severe earthquake was felt, lasting upwards of two minutes; motion trepidatory, the shocks recurring every thirty hours for upwards of a month. This, like that of 1833, was felt in Mexico.

On the 9th of August, 1837, a heavy shock was felt, trepidatory, recurring at thirty hours for nearly three weeks. It was felt slightly at Mexico.

On the 18th of October, 1837, at four P. M. a heavy earthquake occurred, which lasted until the 22nd. During this interval of four days the earth trembled continuously; one hundred separate shocks were counted between four P. M. 18th, and ten P. M. 22nd. During this interval five very severe shocks occurred, four P. M. 18th, ten P. M. 19th, midnight 19th, four P. M. 20th, four P. M. 21st. That at midnight on the 21st was terrific; had it lasted a few seconds longer, rocks would undoubtedly have been rent asunder. Following this earthquake, for six weeks continuously, periodical heavy shocks were experienced, at ten A. M., ten and twelve P. M., and at dawn. At Mexico the shocks were severely felt at the same instants, on the 18th and 19th.

In conclusion, *daily* "*temblors*" have occurred since

the earthquake of 1820. But the season when the heaviest shocks occur is between March and June.

The above is extracted from notes made by a commissary resident for many years, and constantly holding office under the government of all parties.

Under the dread of such visitations and with daily warnings that "all is not at rest," who can be surprised at the desertion of Acapulco? The whole town at this moment bears glaring proof of a recent concussion. Not a *whole house* remains. The churches are demolished; one chapel (La Solidad) alone remains, where mass is performed; but even this is rent, and is tottering.

By reason of such liabilities, houses are never built above the ground floor. Those of the lower orders are most sensibly constructed, of cane thatched. Those of the better class, including the authorities, are of adobes, formed of mud and straw, generally from three to four feet in thickness, in the walls. The latter are generally tiled, to afford ventilation, and avoid insects, which are numerous and troublesome.

Pride alone must induce them to construct these mud habitations, for with less expense a frame of cane covered with tiles would be infinitely preferable.

It is rather a remarkable fact that, throughout the whole of these shocks, the rock-built castle of San Diego (or San Carlos) has experienced but slight damage.

I caused very minute inquiry to be made, in order

to ascertain to some degree of certainty whether any of the solid granite rocks had altered their height above the level. The only satisfactory reply that I could obtain was, That from time immemorial the rock we made fast to maintained its present position, and no change of outer soundings had been observed. High water flows to a hole in that rock, and up to a crown well marked.

The rainy season is also another great drawback, and is felt here severely. It commences about the middle or end of July, and continues until the end of October. Owing to the immediate vicinity of a very lofty chain overlooking the town, (one of 2,790 feet) the fall is heavy, and almost incessant. It has been asserted that in 1837 the rain gauge frequently indicated twenty-eight inches in twenty-four hours. During this period the inhabitants are compelled to use every precaution to keep their houses dry, particularly under foot: a neglect of this is supposed to produce fever. The heat during this period is excessively oppressive, especially in May, when the temperature seldom falls below 98. Water then becomes scarce, and towards the end of the dry season the ponds run dry, and wells are their only resource.

Formerly Acapulco was considered as the main outlet from Mexico on this side; but San Blas is now preferred. The distance from hence is one hundred and four Spanish leagues, and the journey up is generally performed in eight days. The exports consist chiefly

of rice, sugar, dyewoods, and cotton, and of these but a trifling quantity.

The following remarks of a mercantile friend will best illustrate the present state of trade:

"The environs of Acapulco are not badly populated, but the wants of these people, the climate being tropical, are but few, and, like the neighbouring Indians, their principal dress consists of the manta, although they use a little more finery, the men wearing Chinese sashes, (fasas or bandas,) and preferring linen to cotton for their shirts.

The women dress in linen shifts, using navy blues, and calicoes for their petticoats. Stockings are not in use, and for their head gear they entirely make use of the riboza or Mexican shawl, made in the interior. Their hats, shoes, and other trifling articles of wearing apparel are all made in the interior; so that articles for sale on the spot, that can be imported into Acapúlco, are reduced to very few.

"The importation of manta is prohibited, being supplied from the interior. Creas, Russian duck, prints, a trifle of fine linen, such as Bretagnes, Estopillas, &c., a few China goods, as sashes, twine, silk, &c., but principally platillas of middling and ordinary quality, and navy blues. The consumption would not exceed two hundred dollars annually."

Thus far then the commerce of the interior appears to meet their necessities, and the wants of the population are not likely to attract cargoes to this port.

My friend concludes,—

"It is only an increase of population and consequent increase of agricultural industry, that in time may raise the port of Acapulco to any consequence for maritime speculation."

The population of Acapulco in 1836 was computed as follows:

Town.	Men	857			
	Women	1216			
	Total	2073			
Deaths.	Men	35	Births.	Boys	45
	Women	40		Girls	70
	Total	75		Total	115

Excess above deaths 40—about 1 per cent.

The diseases of the country are intermittent fever, ague, yellow fever, jaundice, and dropsy; measles and hooping-cough were prevalent during our visit.

The fort will not bear much scrutiny. Although constructed by the best engineers of the day, San Carlos, the third fortification of Western Spain (viz. Callao 1st, Ulloa 2nd, and Carlos 3rd) is commanded by every easily accessible height in its neighbourhood. It is capable of mounting sixty guns; twenty-five of various calibre are mounted; ten good brass thirty-two pounders show their muzzles very conspicuously, and these we may reckon their main force. Five hundred is stated as the garrison, and this includes militia, (when armed;) one hundred and fifty can be

mustered. They are not well clothed; and of course under such officers as frequent revolutions breed, like mushrooms, little can be expected beyond the most gorgeous and ill adapted uniform that can be imagined, stuffed by more pride than the buttons can well sustain.

The officers here, as in some other free countries, can give you a yard of tape, ramrod, or sword.

An example of their determination to rigidly execute the laws, occurred the day of our departure. Two peasants, murderers and robbers, were condemned by a court-martial to be shot. They were led out with great ceremony, escorted by an officer's guard, and a priest in full canonicals purposely delaying the march, and halting at intervals in order to inculcate religious precepts. They at length reached the fatal spot, a jutting headland fronting the ship. Here two seats had been prepared, with crosses at shoulder hëight, when seated. To these seats they were conducted, clad entirely in white, and their arms securely lashed to the crosses. The priest having repeated their sentence, from the warrant, they were desired to kiss it in testimony of its justice, and proof of their repentance, which they did most humbly. Having received the sacrament, they were despatched by signal, ten men presenting their pieces within three feet of each victim. One was twenty-two and the other eighteen years of age, and the sum for which they deliberately committed murder, four shillings, or less!

As our purser one night had been forcibly persuaded to empty his pockets of his spare cash, and other acts of doubtful character occurred, we are unable to applaud the conduct of the lower orders. Indeed, we were informed that the native inhabitants of Puebla Nueva, a few leagues distant from the town, were frequently in the habit of setting the authorities at defiance, and committing excesses with impunity.

The inhabitants seldom move from home, or in the town at night, unarmed. The peasantry are disarmed before entering the town, and receive their passes and receipts for arms, which are returned on repassing the boundary. This reminds me of the steamers conveying labourers from Dublin in 1836, where their shilalehs were taken from them until they landed on the pier at Liverpool.

After passing our time very agreeably, we took leave of our friends in the Venus, and on the 19th of January proceeded for Realejo, intending to touch at the Sacrificios and port of Guatulco, and determine their positions.

On the 24th of January, being off the position assigned for Sacrificios, the coast was examined closely, for any indentation which might justify our anchoring. At noon we were to the east of Guatulco, but no symptoms of a port. I therefore despatched a cutter with Lieutenant Collinson, to examine for Sacrificios, and rejoin me at anchor on

the coast. After running twenty-four miles without meeting with any indentation to justify the title of port, I rounded to, and anchored off the west point of a bay, which probably may be the Morro Ayuca of Bauza, but it differs much in position.

Landing at the time of anchoring was impracticable, but I succeeded on the following day in obtaining complete observations on a rock off the point, by which this remarkable angle of the coast is well secured; the sea giving me notice to quit, at the instant I had completed, by nearly washing away our instruments.

At sunset, Lieutenant Collinson returned, having succeeded in finding Guatulco, and secured its position. It was, however, too small for the ship.

My detention at this point afforded me very satisfactory data respecting the partial set and direction of the currents. During the first twenty-four hours the current set strong, one and a half to two knots to the eastward. On the day following, having again anchored in a calm, it was found to set westerly, but not with so much velocity. Our dead reckoning varied considerably in every direction, but an easterly set prevailed.

From Morro Ayuca I shaped a direct course across the Gulf of Tehuantepec, expecting to experience some of the gusts which are assigned to that region. In this we were entirely disappointed, although a fresh breeze favoured us for a short period. On approaching the eastern shore, near the

Amilpas range, I was surprised, when at a considerable distance from the land, to strike soundings in sixty-eight fathoms, which continued to decrease very regularly until ten that night, when we changed our course off shore in eleven and a half fathoms, without perceiving land, or hearing the "surf sound," which generally can be detected at night at seven, or even ten miles.

Light baffling airs prevented our making much progress, but the tedium was in some measure dissipated by splendid views of these volcanic ranges. At one view no less than twelve conspicuous volcanic cones were visible. As far as the sea horizon was available, we endeavoured to fix their positions, by anchoring daily before noon. Our draughtsmen attempted to delineate them, but no effort of the pencil could convey an adequate idea of such magnificence. Far as the eye could reach to the N.E., numerous cones of extinct volcanos were readily traced, as friends of yesterday; whilst to the westward we could barely trace through the tropical haze those with which to-morrow would bring us more intimately in connexion. Our observations were continued throughout the day three hourly. Although apparently *overlooking* us, the nearest cone was at least sixty miles distant.

Our progress was but tardy until the morning of the 2nd Feb. when we reached in and sighted the colours at Sonsonate, off which we observed two American schooners at anchor. Amongst the minor

volcanos immediately about Sonsonate, that of Isalco appeared in activity, and has lately given them cause for anxiety.

On the morning of the 3rd February we stood in for Libertad, and despatched a boat for letters, on the receipt of which we bore away for Realejo. On the following morning saw the Volcano de Viejo, and by noon had taken up our old berth within the island of Cardon.

CHAPTER VII.

Excursion to summit of Viejo Volcano—San Antonio—Mr. Bridge, its proprietor—Chinandega—Swarm of musquitoes—Moyotepita—Pine range—Viejo summit—Palm toddy—Return to San Antonio—Move on to Chichigalpa—Posoltega—City of Leon—Its Cathedral and College—Reach Piedra Gorda on the lake of Managua—Attempt to visit Momotombita relinquished—Stormy breezes—Reach Nagarote—Hospitality—Move on to Matiares—Productions—Cholera, &c.—Reported remains of causeway to Momotombita—Reach Managua—Brasil wood noticed—Sleep at Managua—Move on to Tepitapa—The falls—Sulphur springs—Return to Managua—Matiares—Nagarote—Leon and San Antonio—Rejoin Sulphur, and quit Realejo to examine Gulf of Papagayo—Bay of Salinas—Murciellagos islands examined—Return to Realejo—Arrival of Starling with letters—Quit Realejo—Search for and find Culebra—Survey it—Reach island of Cocos—Tedious passage—Pass through Gallapagos, and reach Callao.

CHAPTER VII.

HAVING suffered much of late, horse exercise was recommended to me; and as my professional duties might be much assisted by fixing some of the principal peaks in the neighbourhood, I determined on making an inland excursion for that object. Having paid a visit to Mr. Bridge, the hospitable proprietor of a fine sugar plantation at San Antonio, and which he manages to work with great success, I made arrangements, through his assistance, for mounting the Viejo volcano, from whence I could obtain an extensive view, not only of the mountains, but also of the features of the coast. Provided with the necessary instruments, and accompanied by the surgeon, a mate, and botanical collector, we started for Chinandega at P. M. on the 8th, fully intending to ride on to Moyatepita (a farm belonging to Mrs. Bridge) the same night; but owing to the stubbornness of our guide, who was lately married, and his wife residing at Chinandega, we were unable to advance until five the

CHART
of the
CANTON RIVER
REDUCED FROM THE
Survey by
CAPT. BELCHER R.N.

Nautic Miles

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following morning. Fortunately we had the pleasure of an introduction to Sr. Chico Vallejo, who kindly entertained us during the night.

About half past nine we reached Moyotepita, having passed through a band of mosquitoes, extending three or four miles, which galled both ourselves and horses much, and sadly put our patience to the test. Suddenly they appeared, and after a brisk gallop, as suddenly forsook us.

At Moyotepita we rested, breakfasted, and dined. Moyotepita is situated on the first rise of the great flat of marsh land, through which the Estero Real meanders until it reaches the Gulf of Fonseca. This flat extends easterly behind the ranges of Telica and Asosusco, and probably near, or even as far as, the lake of Managua, by which (I firmly believe) it is fed. By barometric measurement it is not above the level of the observatory at Cardon. Range of temperature 84° to 91° in shade, in a well fifty feet deep 90°.

It was necessary to come to this side of the range, as the Volcano de Viejo is inaccessible on the south.

At four P. M., having procured guides, we proceeded for the foot of the mountain, where we designed sleeping. Our journey lay partly through the woods, where the guides halted for a draught of the fermented juice of the palm, (toddy,) which their previous visits had prepared, and others were now tapped in readiness for our return. As the method

is different from any I have before observed, I shall describe it.

The tree being *felled*, (prickly tree palm,) and the top branches lopped off at their junction, where the cabbage should be, an oblong cistern is cut out, four inches wide, nine long, and six deep. The broad bases of the leaves are laid over this; the cavity fills, fermentation ensues, and in twenty-four hours a pleasant sharp beverage resembling cider results. If it be allowed to remain longer, it becomes bitter, contains more alcohol, and is less pleasant, and more intoxicating. It is sucked through a tube.

After scrambling through much loose lava rock, which I was surprised to see the animals attempt, as it was entirely hidden by long grass, we reached our sleeping station at seven o'clock, where, having picked out the softest stone bed, and unrigged and tethered our animals, we made the most of our time, by devoting ourselves to the sleeping god.

At dawn on the 10th, we remounted our steeds, and passed yet more difficult ground, until half past six, when we reached the lower line of "the Pine range;" that tree observing a distinct height throughout all these mountainous ranges. It became, therefore, a matter of interest to ascertain this elevation, which by barometric data is three thousand feet above the sea-level. Temperature at this time (before sunrise) 66°.

Having tethered our beasts, we commenced the

ascent *à pied*. The first efforts, owing to the long grass, were fatiguing, and the mate was *hors de combat* before we had reached half way. As we ascended, the grass failed, breeze freshened, and spirits rose, and at nine we had turned the crater lip.

Our guides were certainly not at home at this work, and at this moment, when it was time to be observing, my hopes were nearly annihilated by the peak presenting itself on the opposite side of the crater, and apparently inaccessible without great difficulty.

At first we descended to the edge of the inner cone, from whence I thought I discovered a narrow pass; and it was only by dint of perseverance and determination that we could persuade the guides to re-shoulder the instruments and remount. Difficulties vanished on gaining the lip, and we found a very comfortable and well-beaten track on an easy ascent, which the stray, or now wild bullocks, had prepared for us to the summit.

I was fortunate enough to obtain all my observations, by which this position and its height were secured. It is five thousand five hundred and sixty-two feet above the mean tide-level, and two thousand five hundred and sixty-two feet above the pine range. Range of temperature during our stay (from half past ten until half past one) 77°·5 to 80°.

I was unfortunate in the day. It blew fresh,

(although calm at the base,) was hazy, and excepting high peaks and conspicuous headlands, I lost the most interesting minutiæ.

The volcano now consists of three craters. The outer is about five hundred yards in diameter, having the peak or highest lip on the western edge. Within, it is precipitous, from the peak to about one hundred and fifty feet. From the inner base at that depth, the second inner volcano rose to about eighty feet, having within it another small cone, which is inactive. Around the western base of the first or inner, the cliffs rise precipitous, with pines growing luxuriantly from the vertical face of the precipice. Hot vapours arise in many points, and doubtless to this cause they are indebted for their peculiar healthy and luxuriant condition.

No minerals worthy of carriage were observed. We had been informed that sulphur was abundant, but those who descended to look for it saw none. The temperature of the loose soil in the immediate vicinity of the upper hot spring, which exceeded the limits of my thermometers, I should estimate to be near the boiling point, probably 196°. It speedily warmed me to an unpleasant degree through thick boots.

The view of the immediate neighbourhood was very beautiful, and fully repaid our exertions. The map of the country was at our feet; even the main features of the lake of Managua were available. Myriads of field bugs and other insects pestered us,

and the breeze very speedily dissolved the enchantment, by the introduction of a smoky haze.

At half past one we commenced our descent, and at three remounted our steeds. About half past six we reached the farm at Moyotepita, after having felt the value of the precaution of our guides in preparing the toddy, for on our arrival at the spot our water had been long expended, and some were almost fainting with thirst. Mem.—People who ascend high mountains with weak heads and weaker stomachs, should reserve spirits for cases of necessity only—as medicine.

Having rested at Moyotepita until eight in the evening, we rode on to Chinandega, eight leagues, which we reached at one A. M., and at the house of our kind friend Vallejo, enjoyed a most refreshing sleep. At daylight, after a cup of coffee, we moved on to San Antonio, and joined our good friend Bridge and family at breakfast.

I had made arrangements with Mr. Foster, our vice-consul, for the conveyance of a light boat to sound part of the lake of Managua, and examine the island of Momotombita within it, where report stated there were many objects worthy of attention, particularly the idols of the aborigines. Two of our lads were forwarded in her. Mr. Foster himself had volunteered to accompany me, but business detaining him, he despatched his factotum (a young man who knew the country, people, and language well,) as my cicerone. With this addition, and

our party as before, we set off at four on the morning of the 12th.

The roads in this state (Leon) are all excellent, very level, and excepting where the rains have cut their courses, might be travelled in an English carriage. Bridges of course would obviate all difficulty. At this season they were dusty, but the custom of travelling late in the evening, or early in the morning, prevented our feeling the additional inconvenience of the sun, although in many parts the roads are well shaded by trees. Passing through the small towns of Chichigalpa and Posoltega, we reached Leon at nine; where, after throwing off our superabundant dust, we did ample justice to a good breakfast.

Some difficulty arose with the authorities here, in consequence of the vice-consul having omitted to apprise *all* the authorities of my intentions; but on my calling on the chief, matters were soon satisfactorily arranged, with offers of assistance if required. Observations were obtained in the garden of the college for fixing the position of the city, and others taken from the summit of the cathedral for furthering our operations.

Leon is situated in latitude 12° 25′ 30″ N., longitude 86° 57′ 45″ W.; and the cathedral flat is two hundred and forty feet above mean-tide level; the base may be considered one hundred feet less.

Judging from the cathedral and churches now standing, as well as from the carving on doors and

windows, sculpture, &c., of the ruins of the city, (destroyed in a late revolutionary struggle,) Leon must have been a city of great opulence, consideration, and grandeur. So long as the old Spaniards remained, affairs prospered, for capital was not wanting; but they are now rare as one of their palaces, for such their ruins would bespeak them. Society has entirely changed, and become nearly native. The population is stated at thirty thousand, including the suburb Sultiaga, which almost entirely consists of huts inhabited by native population.

Cholera has made great ravages in the states of central America during the last year, and particularly in that of San Salvador. At Leon, three thousand fell victims to this disease alone.

It is a curious fact, and one which I suspected would result from my inquiries, that wherever I have been able to obtain *positive* information, it appears that the mortality has invariably been greatest on the S.W. angle, (or lee quarter.) This may in some measure be accounted for, by the preference which the better classes would take advantage of, by selecting more airy situations on the weather-side, where also the population would be less crowded. Their streets are wide, and mathematically regular; and in the meridian and at right angles, presenting the appearance, from the summits of the mountain, of complete chequer boards. The lower orders suffered most. My authority has generally been a padre or an official, aided by my cicerone, who

appeared to be the friend of the state. Wherever he went, the pet term of Carlito, in an affectionate tone, was sure to welcome him. He had been employed trading throughout this state, and resident at times in each village in our route.

The produce of Leon and its vicinity consists of sugar, indigo, maize, tallow, and hides. The "Chief of Estate" resides there. Formerly it had a bishop, but a vicar at present officiates. The cathedral is large and very firmly constructed. During the revolution, guns were, or were about to be, mounted on its roof, which, from its strong arches, would easily support them. The college is still maintained by the authorities, but I was unable to collect details respecting the establishment, &c. The pupils are educated for the church, law, physic, and state.

I had intended measuring our meridian distance from Cardon by rockets; but either they did not ascend well, or did not burst properly, therefore no definitive time could be noted. Having sent our party on before us at four, we waited until nine in the evening, when by the light of the moon we moved forward, and reached them at our rendezvous at Pueblo Nuevo about one, the distance being eight leagues, and the road good.

This village contains about thirty huts. The chief employment of the inhabitants appeared to be the construction of earthen water-jars,—for which purpose the steatitic nature of the soil appeared to be peculiarly adapted.

At five the following morning, having reclined on a bedstead of stretched hide, with half a gale blowing on my feet, and cold enough for 50° N., we recommenced our journey to the lake of Managua.

I am informed it always blows fresh, and at times very hard, in this neighbourhood. Indeed the strong gales termed "Papagayos," from blowing out of the gulf of that name, commence about the line of Leon, and are first experienced off Cape Desolada, (about six miles to the eastward of Cardon,) and suddenly give way to calms after passing to the westward. This is doubtless the Atlantic "trade wind," increased by induction through the pass formed by the lake of Nicaragua, and our neighbouring mountains. It decreases about sunset, and attains its ordinary force about nine or ten in the morning.

After a pleasant and easy ride we reached the margin of the lake (at Piedra Gorda) about ten o'clock, (the distance four leagues,) where we found our boat and crew awaiting us. We remained on the beach to determine the latitude at noon, and obtain other data, as well as to watch for a more favourable moment for launching our boat.

About one, the sea having decreased considerably, we launched our bark, and freighted her, but it was soon evident that she could not carry us, nor could the crew make any progress; and, as it was impossible she could reach any place of safety before dark, I instantly gave up this expedition;

and loading the horses of my cicerone and self with the instruments, despatched the remainder of our party back, foreseeing that they would prove too great a clog on my operations, and that accommodation for more than two was beyond the scale of the huts we might touch at.

We, therefore, pushed on for such villages as we might find on the borders of the lake, and thus define its outline as the nearest approach to the scene of our intended operations in the neighbouring gulf of Papagayo, intending to make the junction or fall of this lake into that of Nicaragua at Tepitapa the extreme limit. At five we reached Nagarote, (a distance of five Spanish leagues in two hours,) and finding my strength fail me, we remained for the night.

Our host and hostess showed us more decided attention than we had before experienced, and begged, in the honest effusion of their hearts, that I would always make that house my rendezvous when I travelled that road; being then ignorant that my road lay on the "deep blue sea." Of course all this kindness I attributed to the presence of Carlito, who did nothing but play monkey tricks with the little ones from the time of our arrival.

By five the ensuing morning we were en route for Matiares, (eight leagues,) which we reached at eight; temperature 78°, noon 90°. Our journey over this tract presented some slight hills. After breakfast we proceeded to the beach, and obtained

satisfactory data, which places it in latitude 12° 14′ 15″ N., longitude 86° 43′ W.

Matiares is a very small village; population usually three hundred, but decreased one hundred by cholera. It is, however, generally healthy, deaths not averaging more than three or four in the year. No deformities were noticed. Its productions are cotton, maize, and plantains.

I had been informed that a causeway formerly existed from the neighbouring beach to the island of Momotombita, (the diminutive of its neighbour Momotombo, nearly the same height as the Viejo,) and fortunately the place I had selected to observe at, showed the remains. Its direction is towards that island, and at the dry season a few years ago, when the waters were unusually low, it was dry for three hundred and sixty yards. As the only temples, (or caves,) idols, &c., alluded to, are on Momotombita, it is more than probable that this causeway was for the priests, if it really extended so far; but, on the other hand, it is reported that fifteen fathoms surround the island.

At two we moved forward for Managua, (six leagues,) which we reached at five, the road being remarkably good and well shaded. Our animals were in better condition than their riders. About one mile before entering the town, we observed, for the first time, the Nicaragua wood, (Cæsalpinia echinata,) a great article of trade in this and the adjoining state.

We were fortunate in obtaining very decent accommodations. The town of Managua, from which the lake takes its name, is extensive, although not containing many *built houses*. The population, almost entirely native, consists of twelve thousand souls. The town is situated on a gentle slope towards the lake, which washes close to its limits. A large church stands nearly alone at its eastern end, forming one side of what probably might have been intended for a square, but there is nothing attractive about it. At the corners of the streets several images, rudely carved in stone, were pointed out as the work of the aborigines. They are much worn, defaced by time, and merely serve as corner-stones to the side paths.

Managua appears to have suffered severely in the late cholera visitation, losing by it alone six hundred out of the population of twelve thousand. Of this number it is rather remarkable that females between the ages of fifteen and twenty-five, and principally newly-married, were the predominant victims. Generally this spot is considered as peculiarly healthy, the average deaths seldom exceeding one per cent.

I was rather amused at their custom of publishing the bans or notices of marriage. The person who reads the notice is accompanied by two soldiers under arms, moving by beat of drum to the crossings of the streets, where it is duly proclaimed, very much in the style of our criers. The natives of

this place, either from less exposure, more frequent bathing, or difference of origin, appear to be better limbed, finer featured, and of a clearer complexion than those of the places we have passed through. They are athletic, without increase of bone at the joints, and of more prepossessing manners.

At half-past three on the morning of the 15th, we set out for Tepitapa, the point where the Managua descends by its first fall into the waters of the Nicaragua, but distant from that lake fourteen miles. At starting the thermometer stood at 75°, but on passing through a deeply-shaded wood, just as the sun was rising, it had fallen to 61. The distance to Tepitapa is *estimated* at eighteen leagues; but this cannot be correct. I should say that it does not exceed ten, as we reached the house of the padre at half-past seven. After some delay we succeeded in getting breakfast. Inns or houses of entertainment do not exist; the traveller must, therefore, put up where or how he can, and patiently await what follows. There are no waiters, or bells to ring.

I notice this because I had anticipated a better reception from the fraternity, who not only generally take good care of themselves, but from being men of some little education, are more apt to extend the courtesies of life.

After breakfast I procured a canoe, and by the aid of two inefficient boatmen, fearing momentarily to be immersed with my instruments, succeeded in reaching a point within the lake, from whence I had

a fair view of the surrounding objects. After noon I returned and visited the first fall, which is about a quarter of a mile from the gorge of the lake. Here a mass of rock passes across, over which the water falls by an inclined plane eight feet. Below it the stream is spanned by a bridge about fifty feet in length.

On the Tepitapa side a sulphur spring issues from the earth, at near the boiling temperature, and flows into the main stream. My thermometer was not graduated above 120°, therefore I cannot state more than that eggs were boiled in it and my sensation on putting my finger to it, satisfied me it was *near* two hundred and twelve. Crystallization was abundant on the small stones between which it flowed, and some specimens I examined were a mixture of sulphur and calcareous matter. The taste was not unpleasant. It is deemed a sovereign remedy *if taken by the advice of the padre*, and much used both internally and externally. As he seemed to like neither me nor my instruments, he possibly mistook me for a poacher on his domain.

The population of Tepitapa, which is but a small village, (distant twelve leagues from Grenada,) comprises five hundred souls, of which the cholera took off thirty; but the average deaths range at ten per cent.

The produce may be included under the heads of cattle, corn, and indigo. Nicaragua wood (termed Brazil) is cut on the north side of the stream and

sells at one shilling per quintal. The bullocks are the finest I have seen in central America, and were offered at five dollars each; but the cost of driving them to Realejo would make the whole amount to seven dollars each. Fish are abundant in the lake, principally perch. The Savola, or lake salmon of the tropics, is found, but not taken in any quantity. Alligators are also numerous. During the period of our stay, the temperature ranged from 84° to 85°, 5′ water 83°. Evap. 81°.

At a quarter to four we quitted Tepitapa; and our horses, apparently more anxious than even ourselves to quit this inhospitable spot, carried us to our old quarters at Managua in three hours.

After a fresh set of observations on the beach, we moved on at three the following morning for Matiares, where we slept; and by noon the following day reached Nagarote. I was rather surprised to find the doors and windows of our friend's house closed, and as deaths in this country are frequently sudden, began to augur ill. My cicerone, however, led the way through the gate, and we soon found that a calentura was the extent of the evil.

However, as the gentleman was the sufferer, I very soon brought him to believe that he was not quite so ill, and eventually succeeded in removing the talismanic kerchief bandaged about his head. Before we took our departure, he was lively as on my former visit. I experienced the same kind at-

tention, and on our parting at three for Pueblo Nuevo, this good couple evinced very strongly the warmth of their feelings. At sunset, we reached Pueblo Nuevo; and at dawn rode on for Leon, where we arrived at eight, very much fatigued.

It being Sunday, and finding myself too much exhausted for travel, I took rest, and starting at four the morning following, reached San Antonio by eight, in time for breakfast. Here, also, I found our worthy host, Mr. Bridge, in bed, suffering under a smart attack of calentura,—one not to be talked away. These attacks appear to occur very frequently, occupying about one third of the existence of the residents; indeed, the term calentura is so indiscriminately applied to all affections of the head, that one is not so much moved by hearing of its presence, and I am satisfied in most cases that it might be overcome by resolution. I never knew it occur to any one but a resident.

After breakfast we moved on to Chinandega. The population of this town is estimated at eight thousand, and deaths by cholera five hundred; general average one and a half per cent.

All the towns are laid out similarly, in the right-angled plan, with streets north, south, east, and west. Probably this system originated by building the streets to correspond with the churches.

In Chinandega, the centre of the town is pretty closely built, but on the outskirts the houses are

mostly furnished with gardens, which keep them about forty or fifty yards asunder. The fences are often of bamboo, but more frequently of the cylindrical cactus, which runs up to twenty feet.

The houses are generally built of the adobe, of one story, with an open court in the centre. The church is large, and a respectable building.

The produce is chiefly maize, sugar-cane, cotton, fruit, poultry, and hides, collected from the neighbourhood. Coffee has been grown and produces well, but none has yet been exported. An American gentleman, Mr. Higgins, has commenced the erection of a mill for dressing cotton, but I am perfectly satisfied that its principle of action will fail. One failure will put the natives out of conceit of machinery, and thus, instead of introducing any useful improvement, he will considerably injure the interests of others. Even if he succeeds, I can clearly foresee that before he realizes sufficient to cover his outlay, he will become disgusted with the country and—government, I was about to say,—but may add under present prospects,—government there is none—property insecure.

After dining at Chinandega, we remounted, and reached Realejo at three, and at half-past six I was once more safely lodged in my own cabin. One grievous annoyance attending travelling in this country is the garrapata, an insect of the tick species, which is so abundant that if you brush a bush it is sure to shed a host upon you. They rapidly

insinuate themselves under the skin, and are a perfect torment. Even for days after they have been entirely removed, sympathetic twitches are experienced, which are perhaps as great an evil as the reality—in some instances greater. It causes one's skin to contract even to write about them.

During this absence of fourteen days we had travelled over a distance of five hundred miles, and I certainly felt my constitution considerably refreshed.

Realejo is failing more from want of capital, and the insecurity of the present government, than from any want or field for speculation.

The timber which might be exported from hence, in addition to those articles enumerated at the towns we visited, is of the best quality, not indeed for the ornamental work of cabinets, but for substantial house and ship services. The following list was prepared by a person well conversant with carpentry, and has been added to by our botanical collector.

Cedar of two kinds, one adapted for furniture, and the other for canoes. They are known to arrive at a diameter of nine feet, and are said to reach twelve. Mahogany, very compact, light and dark-coloured. Roble; in grain resembling oak and mahogany, some very handsome, of which I have the best specimen. Fir, tough, (Pinus serrotina.)

Guiliquisto;—very hard, resists worms; used for underground work in houses, &c.

Guascino ;—used for timbers of boats.

Palanca ;—tough, and powerful ; used for levers, as its name implies.

Madera negra ;—strong and durable under water.

Palo Brasil ;—Nicaragua wood.

Almendro ;— strong, used for foundations and mill work, rollers, &c. (squares three feet.)

Guanacaste ;—used for bongos, (not exportable.)

Rou rou ; — resembles rose-wood, (furniture wood.)

La ourele ; — tough and serviceable ; used for carts.

Narascalo ;—very hard, probably ironwood.

Caimito ; — fine, box-coloured, straight-grained wood.

Melon ; — yellow, used for furniture, (resembles sanders.)

Guayam de Monte ;—durable, used for ship building.

Granadillo ;—resembles rose-wood, but harder.

On the 20th, as the Starling was yet absent, I determined upon the examination of the gulf of Papagayo, and having completed our second tender, (the Victoria,) we quitted our anchorage, leaving my assistant, Mr. George, in charge of the observatory, as well as with orders and provisions for the Starling.

My principal object at this moment was to seek for and examine the port of San Juan, which spot I had been informed that a Mr. Bailey (employed by the government of Central America) had selected

as the point where the projected canal or railroad from the Nicaragua should communicate with the Pacific.

After passing Cape Desolada, we began to experience the gusts from the lake of Managua, *no high land intervening in its course;* and shortly the gale increased sufficiently to split a few of our sails, and reduce us to treble reefed topsails, courses, and trysails; even this small canvass pressing her much.

One whole day we remained at anchor, the squalls being too powerful to work in, and the necessary expenditure for so doing not being warranted by any equivalent. On the 3rd, by dint of perseverance, we reached the head of the gulf or bay of Salinas, (Bolanos of Bauza,) but had not observed anything like a river or *port.* Indeed, this term cannot be relied on throughout this coast. Wherever a boat embarks cargo, the term port is applied.

Having determined the position of Salinas Island in the centre of the bay, I left an officer (Mr. Speck) in the Victoria, to make a survey of the bay of Salinas, and proceeded with the ship to search for port Culebra, leaving orders for Mr. Speck to rejoin me at that rendezvous.

On rounding the point in view corresponding to Point Catalina of Bauza, we discovered a cluster of eight islands. These I determined to examine, as they did not appear on the chart. They almost formed two distinct harbours, the smaller islands forming a crescent by the south, one large island

protecting the east, and another of similar size forming the line of separation. Passing into the bay we anchored in the inner or eastern harbour, and having fixed the positions, surveyed it, and completed water at a very convenient position, where we anchored in thirty-two fathoms, with a hawser fast to the shore.

We quitted for Salinas, after having satisfied ourselves that Culebra was not near us. The name of this remarkable cape, which we had mistaken for Catalina, is cape St. Helena, and the cluster of islands is termed Murciellagos, or Bat Islands.

The springs are numerous, and there are tolerable rivulets; but only that which we watered at (between the centre point and the main) is safe to approach, by reason of the constant surf. We found the gulf squalls, even in this sheltered position, come down the gullies with great force, and impede our work as well as endanger our boats. In forty-eight hours, however, it was finished. The geological structure of the cape and islands is a schistose serpentine, containing balls of noble serpentine.

As we could not fetch Salinas, I beat up to a position where we observed a flag displayed, rockets fired, and a number of men and women in holiday garb collected; and, it being Sunday, we anchored for the day. The surf was too heavy to attempt landing, therefore we could neither fix our position satisfactorily, nor obtain information about San Juan, although I strongly suspected this to be the spot.

On Monday we ran up to Salinas Bay, and then commenced the coast survey to Realejo, under very easy sail, anchoring for observations near noon as well as at night.

Every nook was narrowly examined, but without success; therefore I am satisfied that Sunday's position, before noticed, was the port in question.

On March 14th we returned to the island of Cardon, and to my mortification found that the Starling had arrived and sailed again in quest of us. As we had not found Culebra, I feared she might miss us and cause further delay.

Here, therefore, I determined to await her arrival, as well as complete some necessary observations at the term day.

I now found that my land trip had been most important; the mountains, whose peaks I had fixed, securing our positions beautifully. In one point which I have marked upon the chart, no obstruction appeared to intervene from the sea to the Lake of Managua, and the peak of the island of Momotombita was frequently used as one of our objects for fixing the positions.

On the 20th of March the Starling returned, bringing but few letters; and to cure general disappointment, I determined on making another attempt for Culebra, in which we all felt interested. I felt satisfied that Bauza had not erred more than in position, and from the summit of one of the Murciellagos I had noticed features which I suspected were those of Culebra. Having embarked the ob-

servatory, stock, &c., and supplies of very excellent sugar and rum, which were obtained at a very reasonable rate from the estate of Mr. Bridge, we quitted Realejo and our good friends there, steering for Cape St. Helena, and, on rounding it, direct for the spot where I suspected Culebra to be situated.

At daylight on Sunday, the 25th of March, we were close off the port, but not being able to detect the Viradores, we wore, and intended running further south; as Kellet had informed me that in his search for me he had been unable to find it.

While in the act of wearing, a gleam of sunshine showed an island inshore, which induced me to make another attempt, and on reaching to windward we opened the heads and discovered the Viradores, but even then could only ascertain from the mast head that any recess of bay lay within. At noon we entered the heads, and at three anchored in eight fathoms in this splendid *port*, justly deserving that appellation.

On landing, I met with some natives, who confirmed us in the name of the port. On Monday we commenced our survey, to meet that of the outer bay, entrusted to Kellett, which we completed in forty-eight hours. I now found that my conjecture respecting the position of the Viradores was correct. The sketch given in Bauza's chart can only be given from an eye-sketch or memory.

The port is certainly magnificent, and from information derived from the natives, I learned that

it is connected with Salinas, and thence on to Nicaragua, Granada, &c. If any railroad is contemplated in this quarter, it ought to enter at the Bay of Salinas, which would render these two ports important. When this portion of the country becomes settled, civilized, and more populous, I little doubt but Culebra will be better known, and probably the chief port of the state of Nicaragua.

Water fit for consumption was not found at the beach, but may be obtained at a short distance up the creek, which a boat may enter at high water. If wells were dug, doubtless it would be found at the N. W. side, as the surrounding country is mountainous. Another symptom in favour of this is the thickly-wooded sides and summits, as well as bright green spots of vegetation throughout the bay.

Brasil wood is very abundant; mahogany and cedar were observed near the beach, but as they have been employed cutting the Brasil, probably all the mahogany and cedar, easily attainable, has been taken.

The geological features of this port differ much from any that we have met with on the coast. On the north side of the bay, resting on a hardened stratum of clayslate, a sandstone occurred containing organic remains; of these, masses had fallen to the base of the cliffs, (about eighty feet above the level,) and were washed by the sea. In one I found large nodules of claystone dendrites. In the western parts of the bay, basalt occurred, with hornblende rock;

and on the eastern side I met with shells enclosed in a solid rock formed by a concretion of magnetic iron-sand. Timber of great variety abounded.

In the bay where the Starling was at anchor there was a large village, where the natives were anxious to dispose of their productions, consisting of fruit, stock, cattle, &c.

On the 27th of March, quitting Culebra, we rounded Point Catalina, which from the disjointed portions, or islands, might have caused that of Murciellagos to be mistaken for it. We passed close to Cape Velas, so called from the rock being sometimes mistaken for a sail, and looked into Catalina bay. Here we lost the Papagayos. Therefore the limits may be considered to be included in a line drawn from Cape Desolado to Point Velas, and it is rather a curious phenomenon that the strength of this breeze seldom ranges so far as this chord, but seems to prefer a curve at a distance of fifteen to twenty miles from the land.

We now regretted the absence of these breezes, and made but slow progress to the southward, the currents pressing us to the eastward, and on the 30th even to the northward of the preceding day. Vancouver notices this current also.

Our destination was now Cocos Island and Callao. Bottles were thrown overboard daily to determine the course of these currents. One was picked up and forwarded to the consul at Panama, which exhibited a course from latitude 6° 16′, longitude

86° 18′, west to Vedaci; seven leagues and a quarter to the south of Mensabe, about ninety miles from Panama, having traversed a distance of five hundred miles in eighty-eight days, on an E.b.N. course at the rate of 5·6 miles per diem.

On the 3rd of April we made the island of Cocos, and on the following morning observed two whale ships at anchor. The currents now drove us westerly, and as I saw little chance of getting the ship in until the afternoon, I started with my gig and tent, and secured my observations for time. In the afternoon the tide ran to the eastward, and the ship ran in under a light breeze, anchoring within the whale ships in nine fathoms, the rocks very clearly to be distinguished, with sand patches between. Our anchor was exactly on the line of foul bottom.

On landing, I was surprised to find a hut and several seamen, one Portuguese, one English, and five blacks, Americans, landed by their own *demand* from one of the American whalers. At first I suspected foul play, but on the masters of the vessels landing and stating the facts to me in presence of the men, they acknowledged "that they preferred living on the island to sailing in his vessel." Their contract was only "from the Sandwich Islands until they reached a port." They were evidently bad characters. Their only subsistence was fish, pigs, boobies, noddies, and other marine birds frequenting the island.

Water is very abundant, and was easily conveyed by hoses into the boats. A survey of the bay and

part of the north side of the island was effected, and its position determined. The soundings off the island rather astonished our friends the Americans, who seldom use any line above thirty fathoms; and the Starling having taking up two positions at anchor in fifty-six fathoms, at one mile and a half off shore, greatly facilitated our measurements. The triangles were extended by the ship and one cutter, and the dimensions on tangental limits determined. Wind and rain put an end to our labours.

In Chatham Bay we noticed the rock mentioned by Vancouver, and left on another the Sulphur's name; latitude 5° 33′, N., longitude 86° 58′ 22″, W., dip. 23° 55′, and variation 8° 23′ 49″ E., as determined by us.

As the determination of the position of this island, as well as its dimensions, were included in my special instructions, (Vancouver stating it to be four miles, and Colnett four leagues,) I was enabled to put the matter beyond doubt. I suspect both were nearly right, and that if we read Vancouver four miles in *diameter*, and Colnett four leagues in *circumference*, the difference will be nothing.

The record we have left will, I trust, assist seamen in rating their chronometers, and taking their departures. But the whalers having cut all the wood fit for fuel, they can only reckon upon water.

Our botanical collector observes: "The vegetable productions of this island are more remarkable for

their luxuriance, than either their richness in variety or value in cultivation; a handsome flora, with but few peculiarities, consisting chiefly of those soft-wooded plants generally inhabiting the moist regions of the tropics. The greater part of its productions are comprised in the natural orders of the Malvaceæ, Palmæ, and the low tribes of Foliaceæ or Cryptogamia. Bombax heptaphyllum is the largest tree which came under my notice: the wood of all the species is light and soft as in Malvaceæ.

"Hibiscus gossypinus and H. palmatus are abundant. Melastoma, a remarkably handsome genera purely tropical, is here represented by M. grosa and parviflora. Of palms a few only are found here; those which came under my notice belonged to the genus of Diplothemium, but were not in flower. A variety of cryptogamous plants abound, but few were in flower during our visit. The most deserving of notice is Diplagium auriculatum, a specimen of which I measured, and found the stem to be thirty-four inches in circumference; unusually large for that species of fern."

We felled one of the Bombax heptaphyllum, eighteen inches diameter and forty feet in length, intending to try it for boat plank. Its bark dyed our decks a deep red brown. Unfortunately it was thrown away before any experiments were tried on it as a dye. The wood split freely in the direction of its length, and was useless.

Fish are abundant in Chatham Bay, but were not

easily taken at the ship. The whalers sent their boats daily to fish in the tide stream between the small island and the main, and were very successful. Shell fish were scarce, and few worth preserving.

Boobies, (Pelecanus sula) and black noddies (Sterna stolida) were very numerous, and easily taken. The small white tern were plentiful, but kept to the trees, as well as the gannet and frigate pelican. A hawk and sparrow were the only land birds taken.

The cocoa-nut has disappeared entirely from the eastern bay, but was noticed on spots (inaccessible by reason of the surf) to the westward.

The western bay is subject to sudden rollers, particularly at low water, at which time the flat extends to a great distance. It is also more subject to calms, and consequently not so easy of ingress and egress; and being exposed to westerly winds, watering at all times becomes difficult, and at low water is quite impracticable.

Chatham, or Eastern Bay, possesses good anchorage; a vessel may anchor within a quarter of a mile from the beach in six fathoms, (if requisite,) but the best anchorage is in twelve fathoms. There a constant draught will be experienced between the opening of the islets, and a vessel can generally enjoy the refreshing sea breezes, and fetch out at once, clear of the dangers, which are but few.

It was not without surprise that I read Vancouver's opinion of this island, vol. iii. p. 369. The view of the two bays, with the magnificent S.W. cliffs and

waterfalls, like silver threads, leaping from the richest and varied tints of green that can be imagined, would put a painter in ecstasy. Season, however, may make a material difference. The same objects we view and are delighted with in sunshine, are dreary and uninteresting in gloomy weather, (Mount Edgecombe to wit.) There certainly is an entire absence of low country and undulation of hill, &c.; but this, although a defect, does not take from other beauties.

The thicket is not now impenetrable, as the self-exiled whalers traversed easily from bay to bay. Goats are said to abound, but keep to the heights. Pigs are plentiful, and one large hog was sufficiently inquisitive to look into the tent at a distance of twenty yards. By reason of our magnetic operations, we were non-belligerents, or he would have paid for his temerity.

The stream in West Bay produces fresh-water fish, but we could not obtain any. A curious bull-head was taken, as well as fresh-water crustacea, at our watering-place. Some of our men, who had landed to wash and amuse themselves, found their way up the hill east of the watercourse, and saw into the interior, which they described as a lake or large sheet of water. This would account for fresh-water fish in West Bay. The quantity of water we had noticed in streams, waterfalls, &c., and which were not much augmented by heavy rains, or by the stream in our immediate vicinity,

must be supplied from this lake. No rains could preserve the volume and equality for twenty-four hours.

The soil about the beach was found to be a rich earth, but on the first flat above the sand, of a black rich mould, overrun by a convolvulus, which also ascended the trees near the water, and crowned them, producing a grove within, with a very pretty effect.

I planted seeds of the mahogany, horse-chesnut, calabash tree, pumpkin, water-melon, Swedish and common turnip, large Russian radish, and pine tops. I also left a further supply with the people, with a request that they would appropriate any hogs which might attempt their destruction. I particularly recommended to their attention the turnip and Russian radish, as a valuable remedy, or preventive, for scurvy.

Before my departure I used every persuasion with the masters of the Americans to take these unfortunate people away, as well as pointing out to the people themselves the misery they must endure, and the foul suspicions which the next vessel would entertain of their conduct; but only one embarked.

On the evening of the 6th of April, we drifted to the southward, and although signals were made by both vessels flashing during the night, and latterly by rockets and guns, the Starling was not to be seen at daylight, thus affording full proof of variety of current. We had cleared the south end of the

island whilst the Starling was on the north. She was set *westerly*, and Sulphur *easterly* About nine she was observed dead on our lee-beam, when we bore up, and rejoined her.

Wind and currents continued to baffle us much in our attempt to reach one of the Gallapagos islands, where our meridian distance might be important.

On the 10th I despatched the Starling to Guayaquil, in order to bring away an officer, and some of our most needful supplies, left for us, at Puna, by H. M. S. Cleopatra, with orders to rejoin at Callao.

We were now visited by heavy rains, during which the wind generally favoured us, but it was not until the 18th that we made Abingdon Island, one of the Gallapagos, and passed within two miles on its western side. We found the current setting strong to the northward and westward.

On Saturday, the 21st of April, being in 0° 30′, N., and about a degree west of the island of Albermarle, a course of experiments was made on the currents and temperatures, from 1000 fathoms, 600, 500, 400, 300, 200, and 100, to the surface; being interesting as to their proximity to land, and within the influence of the Galapagos currents.

Captain Fitzroy has remarked on the differences of temperature experienced on different sides of these islands. Orders were issued in consequence to watch narrowly, and hourly, for any change of temperature; and this was particularly attended to in passing Abingdon Island. No perceptible change

was noticed; but on the 21st, when sending the water-bottle down, the temperature of the sea at one hour before sunset was 80°, 5, but half an hour afterwards 78°, 5; temperature at one thousand fathoms, 43°, 5.

Baffling airs now distressed us considerably, reducing our crew to short allowance of bread and flour; and on the 11th of May we had reached latitude 22° S., longitude 104° W., not a very great distance from Easter Island, and nearer Valparaiso than Lima.

Here, however, we took a breeze which led us up to Pisco on the 1st, and on the 3rd of June, after an extraordinary passage of seventy-four days, we ran through the Boqueron and anchored in Callao roads, having been then four days *without* bread or flour.

CHAPTER VIII.

Naval forces at Callao—Refit the Sulphur—Arrival of Admiral Ross—Periodical observations—Visit the coast below Callao—Cerro Azul—Port and town of Chilca—Disturbances in Peru—Arrival of the Chilians—Troops land at Ancon—Engagement near Lima—Chilian forces enter the city—Ladies witness the action—The Sulphur quits Callao—Visits the Hormigas, Payta, Guayaquil.

CHAPTER VIII.

We found here H. M. S. Imogene, Captain Bruce, and Harrier, Captain Carew, watching the motions of the belligerents; the French Commodore Villeneuve, in the Andromede 60, and Alacrité brig, and the American 80 gun ship, North Carolina, bearing the broad pendant of Commodore Ballard; with the corvette Lexington.

The Chilian squadron, consisting of two large corvettes, two brigs, and a schooner, under Commodore Postego, were cruising off San Lorenzo, blockading the port; but as the combined officers representing the three nations, protested against its validity, vessels entered, with occasional detention. The force of the Peruvians amounted to one corvette, one brig, two schooners, and a few gun-boats, protected by the castles of Callao.

On the 5th I had the pleasure of becoming personally acquainted with Mr. Wilson, her Majesty's chargé d'affaires in Peru, to whom our department is very much indebted for his very active and decisive

exertions in forwarding our views with this government. Permission was immediately obtained to erect our observatory on the lines, and although the hostile squadron was constantly at hand, the further privilege of embarking and disembarking at all hours of the night was conceded, the parole and countersign being delivered on board daily by an officer.

In reply to letters sent by Lord Palmerston to our consuls in the Pacific, special letters from the various governments, assuring me of every facility and assistance in my pursuits, were officially forwarded to me by the respective consuls.

On the 7th of June her Majesty's ship President, bearing the flag of Rear-admiral Ross, C.B., arrived, and anchored at Callao.

Our refit commenced, but owing to scarcity of artificers and other delays, which I could not control, the 7th of August arrived before we got to sea. In the interim we examined the Boqueron Passage, which had been reported to have narrowed, and found that it was fully capable of affording a safe entry for ships of the line.

Lima and its vicinity has been so frequently described, that I shall not dwell upon this subject.

I must, however, observe, that of the city itself and its streets and houses, I was not much enamoured. Viewed from the summit of San Christoval, one of my elevated stations behind the city, the whole coup d'œil was splendid in the extreme. Lima was but like a chess-board on the table beneath us; the

churches, cathedrals, &c., resembling the pieces. The stream of the Rimac swept silently round its walls, and soon lost itself in its meandering course to the sea. Our interest was more peculiarly excited by the castles of Callao, with the colours of Peru, bidding defiance to her enemy, whilst the ships of war of France, America, and England, with their brood of merchant vessels, lay deriding the assumed blockade. On the west was the island of Lorenzo, and to the southward the range of Morro Solar and bay of Chorillas.

Between the 21st and 24th of June, the customary term observations for magnetism and meteorology were completed; but, although the transit instrument had been in the meridian for eight weeks, I was unable to obtain the moon during the whole interval. The temperature during our stay, (from June to August,) ranged from 60° to 79°, the mean, buried four feet beneath the earth's surface, being 74°.

It is asserted that it "never rains at Lima." In discovery ships, or vessels on scientific research, the law is "believe *nothing* you *hear*, and only *half* you *see*." I *know* I heard very heavy pattering, and I *saw* heavy streams issuing from tops of houses and traversing the streets. The Peruvian dews, however, which afford the prevalent moisture of the season of our visit, are rather heavier than our "Scotch mist," and this probably is more the visitant of Callao, where I did not witness heavy rain.

It is strange that at a port where vessels are constantly undergoing repairs, heaving down, &c., not a copper bolt or nail (except sheathing) can be procured, and the marine stores in general are of a very inferior quality. The supplies of beef, vegetables, &c., for the ships of war ought to be good, but it is absolutely necessary to be a little scientific upon this point, and to be satisfied that the contract is duly fulfilled.

On the 17th of August, having refitted as far as the resources of the place would admit, I quitted Callao, in order to examine the coast between Cerro Azul and Callao, a distance of sixty miles. We reached and anchored in the bay of Canyete on the 12th, and, after some doubt about the rollers, succeeded in landing, and delivered my letter from the Peruvian government to the chief authority, a military commandant, (corporal,) who affected monstrous importance, and intimated "that the change of government rendered any document authorising my pursuits *null*; but that courtesy amongst Caballeros of course permitted my doing as I pleased." A conclusion to which he plainly saw that I had already arrived before this last sentence, and his magnificence shortly oozed out.

The state of the country, and the specimen I had just witnessed, together with duties which tied me to the beach, precluded my visiting the country.

Cerro Azul, or the port of Canyete, is an open bay, in which landing at all times is very precarious.

But the nature of the coast affords great facility for constructing a breakwater, which would render this bay more deserving of the name of port. In its present state they contrive to embark sugar, which is produced in tolerable quantity in the fertile valleys of Canyete. These I overlooked from my station on the summit of the Cerro Azul, or about three hundred feet above the sea-level. The town or village consists of one house, one church or chapel, and a few huts, arranged on three sides of a square, the fourth open to the sea, with other straggling huts, amounting altogether to about twenty.

Cerro Azul is a high, bluff, insulated clump, projecting into the sea, and at a short distance might be mistaken for an island. Its predominant colour is yellowish red.

There are no objects of interest between this and the Asia Islands, which are distant a few miles northerly, and are merely a patch of high rocks projecting about two miles to seaward, from a very flat sandy beach, having a channel carrying four fathoms, but well studded with rocks, which by daylight are easily avoided. Asia Peak is situated latitude 12° 47′ S., longitude 76° 34′ W., and its island is about half a mile long by a quarter broad, having no vegetation. There is good landing in a very snug bay on its eastern side, where a seal fishery has apparently been carried on at times.

Between Cerro Azul and Asia Island the coast

is dangerous, and landing generally impracticable, but the lead will always afford timely warning. A little to the northward of Asia Island is a deep bay, but neither here nor at any point, until reaching Chilca, could we find landing; although we were informed that this could be effected at the river Mala. We did not see the river, nor anything like one. It was possibly screened by the surf.

Chilca Point forms a sharp elbow in the land, making a very deep bay, in which a small town was noticed. A remarkable peak, called Devil's Peak, rises about three hundred feet perpendicularly, and forms the eastern limits. Northerly from Chilca Point three miles, lies the port of Chilca, formed by a large island, which enables vessels of small draught to lie in a complete dock, land-locked, the outer harbour having good anchorage in ten to fourteen fathoms.*

A small village of huts, with a chapel, is situated on the eastern beach of the inner harbour, and is apparently merely the resort of fishermen. The people, probably mistaking us for Chilians, had deserted their huts. The whole soil is so entirely impregnated with salt, that every stone has an incrustation of pure white crystalline salt on it, and in many cases I noticed that it cemented the stones together to a thickness of four inches, solid salt. This, of course, is of great importance to the fishery.

* Her Majesty's ship President, from a tracing supplied, anchored at this port.

but a sad drawback to the seamen who may seek for water in this neighbourhood. A road runs through the valley of Chilca to the town in the bay before mentioned, where bright green tints afforded assurance of fertility.

Between Chilca and Chorillas no landing on the coast could be effected, but I succeeded in gaining a position on the Great Pachacamac, an island of about four hundred feet elevation, from whence I commanded a view of twenty miles around. These islands are situated immediately off Lurin, and about two miles from the beach. The whole space between, up to the point of Morro Solar, is unsafe.

Between the Pachacamac Islands and the main our shipping have resorted for anchorage.

Lachira Bay, under the point of Morro Solar, (having been named as the rendezvous for British shipping, should the blockade of Callao be maintained,) became my next point of interest. Its character is summed up in few words. The bay is open, landing bad, (if practicable,) and anchorage untenable and even dangerous; in proof of which we left there the fluke of our anchor.

On the 25th of August we returned to Callao, having been absent eighteen days, out of which twelve were employed in the survey.

Lima had fallen into the hands of the Chilians. The revolution in Peru had for some time been talked of, but so openly, that those unaccustomed to such changes did not credit that any actual mea-

sures were in contemplation. General Nieto, an old officer under Gamarra, and then off the port in the Chilian fleet about to besiege Callao, had, it appears, held a communication with Gamarra, assuring him that on the retirement of the Bolivians (which he and Orbegoso would effect) and appearance of the Chilian fleet, they would throw off the yoke of the Confederaçion, and declare Peru free.

The Chilians being slow in their arrival, and fearing that their measures might be counteracted by the party of Santa Cruz, Orbegoso and Nieto, eight days previous to their appearance, (8th of August,) threw off the mask, and entered Lima with four thousand men, when the Confederaçion was declared dissolved.

General Miller, who held the castles of Callao, was requested to remain; as was also Moran. The latter indignantly refused, carrying with him all the Bolivians, which thus effected Nieto's first manœuvre. General Miller, rather than uselessly shed Peruvian blood, resigned the castles, and retired to the south, to watch the interests of Santa Cruz.

On the 5th of August, the Chilian fleet, consisting of ten vessels of war, and twenty-six transports, arrived, and anchored out of gunshot. Garrido, the Chilian minister, landed, and proceeded to Lima. This was to gain time, having been apprised that their landing would be warmly opposed at Callao. The fleet, therefore, repaired to Ancon, landed the

troops, and pushed their picquets to the Boca Negra before night.

On the arrival of the Chilians they declared, "that they did not come to make war against Peru but against Santa Cruz," and wished the Peruvian army to join them, but upon conditions which the latter could not accept.

On the 8th the Chilian army, five thousand strong, landed and advanced three leagues on the road to Lima. Garrido, having no credentials to present, retired to the Chilian camp.

The Peruvians under Nieto and Orbegoso, amounting to two thousand men, encamped two leagues from Lima, in the direction of Ancon.

From the 9th until the 16th, pretended endeavours were made to conclude a treaty of peace, during which interval the Peruvians received an accession of force, consisting of two hundred men under the command of General Vidal.

On the 18th the Chilians occupied the position of La Legua, half way on the road between Lima and Callao; the Peruvians retiring into Lima.

Hostilities commenced on the 21st. The Chilians advanced towards the N.W. side of Lima, where they encountered the Peruvians; the engagement commencing at four P. M.

Much hard fighting ensued, and the Chilians, it is said, would have been repulsed had not General Loyola and Colonel Saldeas, by Nieto's orders, it is

reported, withdrawn the cavalry, and sacrificed the infantry.

At six the Chilians entered Lima by the bridge, and at eight had possession of the town.

In this affair the Chilians lost three hundred killed, and had three hundred wounded. The Peruvians three hundred killed, two hundred wounded, and three hundred prisoners. During the night, Nieto, who did not enter the action, and who is accused of deserting his party, entered Callao castles, followed by seven hundred infantry.

Orbegoso, who is reported to have behaved well, and was the last man to quit the bridge, retired three leagues to the south with the cavalry, and Vidal remained to the north of Lima, collecting stragglers.

Previous to this, the Chilians by sea commenced firing on the castles of Callao, and cut out the sloop of war, Socabaya. The brig Fundadora was scuttled, to prevent her sharing the same fate. This was merely a proof of their sincerity in the non-declaration of war!

On the entry of Gamarra with the Chilian troops, they sung Viva el Peru, &c., declaring that they did not make war against it!

On the 23rd, two thousand Chilians approached the castles of Callao, which were defended by Colonel Guarda, with six hundred artillerymen and sailors, and seven hundred infantry, but Nieto was without authority. At this moment we returned,

and the preceding statement was kindly afforded me by a friend who kept notes of the proceedings. At the moment of our departure we had observed the Chilian fleet bear up for Ancon.

A cabildo was now held, and Orbegoso (absent) named president. D. M. Salazar was then nominated, but declined the honour. A mock committee was then sent to Gamarra to request his compliance, when, after much *pressing*, he accepted the command, and was, I am informed, hooted in the palace.

On the 27th, having obtained passports from both parties, I passed through the belligerents to Lima, where I found everything so quiet that I could hardly imagine war had taken place. Some of the ladies I visited had witnessed the action, from the Miradores, on the summit of the houses, and had seen the unfortunate infantry lanced like sheep, on the desertion of their own cavalry. All were loud in abhorrence of the treachery and cowardice of their leaders, and I am satisfied that had the command been entrusted to the softer sex, a very different tale would have been told.

By some strange freak of nature, the ladies of Lima seem to possess all the courage and energy of mind which should animate their protectors, and are dreadfully inveterate against any of their male relatives who are found wanting in the proper quantum of spirit,—using the strongest language without hesitation.

On the night previous to our departure, Nieto, Lafuente, and others, embarked on board a schooner, the officers in the castles declining, we understood, to allow them to remain. It was strongly reported that Nieto was embarked in the Sulphur, which our immediate departure seemed to confirm.

Heartily sick of the occurrences at Callao, &c., and not having had opportunity for enjoyment either of the country or the customary gaieties of Lima, we quitted Callao, (not, however, without regretting many excellent and estimable friends,) and shaped our course for the Hormigas, where I was fortunate enough to land the morning following, and secure its position beyond any chance of future dispute. (Chronometers to the same second.)

From thence we started for Payta, where we anchored on the night of the 2nd September, and on the day following secured our position. From Mr. Higginson, our worthy vice-consul here, we obtained every assistance and information, and enjoyed ourselves much during our short visit.

Payta is an excellent position for supplies of cattle, vegetables, or table necessaries, but, unfortunately, does not abound in wood or water, for both of which *payment* must be made, and that exorbitant.

We were fortunate in obtaining here some excellent cordage, which is rather scarce on this coast; very probably that exchanged by some of the whale ships which frequently touch here for supplies of

stock, and more particularly the sweet potatoe, which is an excellent anti-scorbutic.

Quitting Payta on the 4th, we anchored off Punta Espanola, in the island of Puna, at six A. M. on the morning of the 6th. This is the summer residence of Mr. Cope, our consul to the Equador, and where ships of war usually anchor previous to passing up the river to Guayaquil. At this point also our stores and provisions, left by H. M. S. Cleopatra, were by his kindness housed in his own warehouse.

CHAPTER IX.

Proceed to Guayaquil in gig—Ladies of Guayaquil — General Wright's excursion to Bodegas—General Flores — Batahoya, Bull fight—Alligators—Balsas, Canoa de piéca—Samborodon —Sulphur drops down the river— Harrier calls at Puna— Capture of an alligator—Handsome conduct of Government of Equador—Return to Panama—Visit Yslas del Rey—Witness pearl-diving operations — Arrival of despatches — Sail for Realejo—Reach Realejo.

CHAPTER IX.

As Mr. Cope was absent at Guayaquil, I proceeded by the morning tide in my gig, accompanied by Kellett, and reached his house in time for breakfast, when we were received with all the warmth and hospitality for which he is so justly famed. Although a great invalid, his activity of mind soon set aside all infirmities, and, breakfast ended, he insisted upon accompanying us to call upon the governor and military commandant, General Wright. The latter relieved our good friend from further labours that he would willingly have persisted in, and took us the customary round of visits to the fair goddesses of Guayaquil.

I had heard the beauty, affability, courtesy, &c., of the ladies of Guayaquil rapturously extolled, and was certainly prepared to admire, and bow to general report. I have seen beauty, too, in our own country; but the extreme formality there exhibited certainly cast a film over my eyes which shaded their perfections.

We were received by the ladies in state, seated on a sofa or throne, in front of which a large carpet, or square rug, was spread. Etiquette forbids approach within the limits of the border.

Their complexions, from never exposing themselves to the sun, are certainly very superior to those of the Limanians, whose brunette tint, vivacious spirit, and dark, full, speaking eyes, are infinitely more likely to endanger an infraction of the second commandment.

I understand that the male relatives of these Guayaquilanean heroines have declared a civil war, upon the question of being kept at such a distance, and of rendering such absolute homage.

Our time was fully occupied in embarking our stores, &c., and refitting, until the 25th September, when I carried the ship up to Guayaquil to embark coals, and complete other necessaries.

As our worthy consul had some affairs of importance to talk over with General Flores, previous to his journey to Quito upon an important official mission, and as it was not only right, but prudent, that I should become acquainted with the future president, as well as greatest general of the Equador, I determined upon accompanying him, to pay my respects, and such ceremonies as my ship, from her distance, was prevented from showing.

Our party, consisting of the consul, General Wright, Lieutenant Kellett, Mr. Hinds, assistant-surgeon, Mr. Richards, midshipman, and myself,

quitted Guayaquil in our pinnace on the evening of the 1st October, for Bodegas, and reached the house of General Flores on the evening following. Great rejoicings, &c., had just terminated, on the occasion of the saint's day of his wife, who also had just been confined of a daughter, who was christened Victoria, in honour of our queen. All, therefore, was in confusion, but our reception was as warm as could be wished, and our treatment princely. Having brought up our saluting chambers in the pinnace, they were landed immediately below the general's house, where the boat's hull was hidden, and the colours of the Equador being displayed at our top-mast head, a salute of fifteen guns was fired, which shook the surrounding houses, and startled their inhabitants, no pendant having before been displayed or salute fired in Bodegas. The general, who instantly comprehended the compliment, expressed himself very warmly on the subject, through Mr. Cope.

General Flores is about thirty-eight, slight, but remarkably well proportioned; his countenance is intelligent and inquiring, and he appears to have studied hard to master every subject which reading and conference with men of science could assist him to. For this country, he certainly is an extraordinary man, and when it is recollected that for his valour alone he has been designated by his republican countrymen "The first citizen of the Equador," and is now about to resume the presidentship for the second time, it will readily be imagined that

more than ordinary activity and intelligence must have been his passport.

General Wright, (an Irishman,) who was also his companion in arms under Bolivar, and subsequently served under General Flores, distinguished himself in Mina Rica, and several other actions. He assisted much in rendering our visit pleasant, and drawing out the general, who delighted in conversing on the various subjects of machinery, steam, &c., which he hoped to introduce, at his own expense, into this country.

On the second morning we made an excursion through his estate, which is well stocked with cattle, and has been cleared to a very great extent by the dependants of the general, who being for the greater part old soldiers who had served under his immediate eye during the war, preferred living on his bounty, and doing their best to merit his protection. We breakfasted at a very neat and roomy farmhouse, about three miles from his mansion, where the viands, &c., had been previously forwarded.

We noticed great numbers of birds of fine plumage, and shot several very interesting specimens, which were added to our collection. In the afternoon we crossed the river to the town or village of Batahoya, which contains about two hundred houses. These, owing to the lowness of the situation, and occasional swelling of the stream, are generally elevated on legs, about six or seven feet

above the ground. I am told that at times they visit in boats.

The novelty of a bull-fight was the principal inducement to this visit. I am not at any time much interested in such matters, but the present exhibition was entirely devoid of interest. The animals were not disposed to be excited, nor were the actors particularly anxious to display their prowess.

But to return to the farm: when the general proceeds to Quito to assume his functions as civil magistrate, the house, farms, and sugar-mills, will be transferred to his present aid-de-camp, Colonel Ponti, who will pay a rental of 10,000 dollars per annum during the four years of his presidency. But I much doubt that the same content or success will result, under a less vigilant and popular man than the general. The dependants who cheerfully earned their subsistence under his control, will now require wages; and to support so large an establishment will very soon strain the proceeds below the means of paying so large a rental.

After experiencing the most marked civility from our kind host, and an earnest request that our intimacy should not end here, we parted, greatly delighted with our excursion.

Our passage up may be said to have been almost in the dark; I omitted, therefore, to dwell upon the river and its banks.

At the present season the tides flow within nine miles of Bodegas, and therefore the ascent is easy;

but in the rainy season I am informed the freshes are very strong, the stream frequently rising so far above the ordinary level as to flood the streets of Batahoya, and the farm-houses on the banks. The houses, constructed as before noticed, are therefore only tenanted on the first floor, and appear like bird-cages on legs.

The river is fresh as low as Guayaquil, (and even lower;) but the water even there is not considered fit for consumption; consequently, the greater part used for drinking is brought down the river in earthen jars, containing about seven gallons each. These are compactly packed on Balsas,—which are rafts constructed of ten logs of wood, from twelve to fourteen inches in diameter, and sixty feet in length. The wood used for this purpose, a bombax, has obtained the name of balsa wood. They are calculated to bear a pressure of fifteen to twenty tons, independent of the men required to navigate them, and to this amount they are generally laden.

On these Balsas, houses are also constructed, varying from thirty to forty feet in length by twelve wide, and in such conveyances whole families are transported to Bodegas and other places. These we observed at Batahoya, and we were informed that some continue to make them their residence during their visits from home. Many we observed were thus inhabited, and also I noticed their tenants bathing; but where alligators are so numerous it must be attended with risk.

Others travel more expeditiously by the canoa de piéca, which derives its name from being a canoe *built*, instead of hollowed out of a single tree. One of these will contain one hundred persons: it is furnished with an arched housing at the stern, with sufficient shelter for hammocks &c., for one family. They are also used for the conveyance of troops.

The vegetation on the banks of the river is very luxuriant, and studded with small sugar plantations. The farm-houses perched amongst them appear neat and comfortable, but on a closer inspection, have not much to induce one to seek their shelter.

Alligators are very numerous; forty-seven of one swarm were counted before they glided down the mud into the river. None were under ten feet; they were mostly estimated at fifteen to eighteen, and some were *monsters*. The peculiar sound, of closing the jaws with a noise resembling *cluck*, is anything but musical. We were assured that these were *nothing* to what we should have seen had we passed through the Estero de Lagartos, (or Alligator Creek,) that *there* we should have encountered them in myriads.

About noon, it being low water, and the tide against us, we landed, to afford our men time to dine, take a run, and regain their wind.

Here we had an opportunity of noticing one of the small farms, and their tenants, who appear to be far from easy in their circumstances. Their rude

machinery for crushing the cane, sufficiently denotes their want of ingenuity and exertion amongst themselves; at the same time it becomes very apparent what enormous advantages would accrue from the introduction of machinery and engineers. In the loss of the example of such a man as General Flores at this particular moment, and for a period of four years, I am induced to fear that the evil results here will not be sufficiently counterpoised by his duties to the republic. There are moments when master minds are imperatively called for to guide the helm of state; but in quiet times it is possible that such powers might be more beneficially exerted in a smaller sphere; and this too is still more apparent when the elevation does not give the command of resources by which such abilities can be called into play for the general good.

The rise and fall of the stream itself might very easily be taken advantage of; mills might be erected on a small scale, and the simplest of their kind would open the road for a greater demand, as well as for those of superior construction,—even to steam. The natives are as yet but children in these matters, and until they learn the use and value of machinery *as toys*, the magnitude and complication of greater undertakings will deter them from approaching them.

We shot several varieties of birds, and at one spot, without moving from beneath the same tree, no less than ten humming birds were obtained.

The flood did not run long, coming in and expanding its force almost at a gush; we, therefore, resumed our progress, and about four passed the town of Samborodon, the half way, or resting spot from Guayaquil, probably from its being the only village where supplies for a large party can be obtained, as well as the home of most of the boatmen.

The appearance of the town is improving; but its inhabitants being entirely coloured, and not otherwise interesting, we preferred using our best exertions to reach Guayaquil before the change of tide. This we effected by ten that evening.

From the foreign consuls, as well as from our kind friend General Wright, we met with every attention, and our affairs at Guayaquil being completed, we took leave of them on the 30th, taking with us our good friend the consul, and without kedging beat and backed through the narrows without accident, reaching our old anchorage off Punta Espanola on the morning of the 4th.

H. M. S. Harrier had called during our absence, on her way to San Blas and the Gulf of California, to collect freight, but only remained forty-eight hours; consequently I had not an opportunity of seeing my good friend Captain Carew.

By my letters, I found that affairs in Peru were in *statu quo* at Callao. Nieto, Lafuente, &c. had landed at Payta, and a Chilian force had attacked

it. The two former retired on receiving about 2,000 dollars, and had arrived at Guayaquil before our departure, but unnoticed by the authorities. Subsequently, the Chilians refusing all terms with the inhabitants of Piura, marched against them, beat them, and after capture, barbarously murdered the captain of the port of Payta, and committed other excesses.

Our stay at Puna enabled us to collect several varieties of birds, shells, and animals. In one of my excursions, observing an alligator of twelve feet asleep on the beach, and suspecting him to be dead, I passed the lead line under his nose and jerked it round his throat, taking the precaution of giving the other end, similarly passed, to two of the boat's crew. Rather to my surprise, he snapped his jaws, and made for the water, but a turn of the line round a rock considerably increased the pressure round his throat, and he was securely taken to the boat. After towing him a considerable time, and believing him to be drowned, we tried to get him into the boat, and had nearly succeeded, when he made a snap at the gunwale, and tore a portion of it away. We immediately decided that he was not fit society, and towed him astern.

After having been landed for some time, the boat's crew commenced the operation of skinning him, considering him quite dead. Indeed, his stomach had been some time exposed, and the skin laid open to the tail on both sides,—when by a sudden convul-

sion he snapped his jaws, and included both hands of one of the crew, (who was sitting on his head to steady him,) cutting through several fingers, but fortunately without injuring any bones. The instant the country people saw him they exclaimed, "Patos, patos,"—intimating that he was a well-known connoisseur and purloiner of fat ducks.

Having completed our wood, water, &c., we took leave of our hospitable friend the consul, with very great regret, for I am certain there was not a man belonging to our establishment who did not feel his kindness in some shape. We directed our course for Panama, the Starling, as usual, having the Victoria under her wing.

I cannot quit this port without mentioning the very handsome conduct of this government relative to our stores. On their arrival in H. M. S. Cleopatra, and it being reported that they were intended for this expedition, (special directions having already been issued to afford us every assistance,) the authorities consented to their being landed at Mr. Cope's *private* stores at Puna, where there is no officer of customs; and on Mr. Cope's sending the keys of two locks placed on them, they were returned with a very handsome message, and a rebuke to the inferior officer for receiving them. Part of these supplies consisted of articles contraband at this port, and these were in very large quantity.

On entering the fifth degree of north latitude, we began to experience the rains, the winds at the

same time pressing us to the eastward, which delayed us considerably. Vessels ought to endeavour to reach Point Mala, and go up between the Otogues, Taboga, and the main, on the western side of the Gulf of Panama. I think we lost three days by not following that route. On the 17th we reached Taboga, where I landed to obtain time, and at twelve the same night anchored off Panama.

In the morning I called on our new consul, Mr. Cade, late of the Bogota mission, but not finding our anticipated despatches, and the mail not being due until the 20th, I moved the ship to Taboga, to complete water, and make sundry observations which the more frequent showers at Panama, and the distance from the shore, rendered inconvenient.

On the 24th October, Mr. Cade forwarded our despatches by his servant, and the day following we returned to our old anchorage off Panama. Mr. D. Gordon, Mid., of the Starling, having suffered severely from the climate, was sent home by the return mail, with our gleanings since February 1837.

As it became an object to ascertain the state of the Yslas del Rey (now the Islands of Columbia,) and to make up my mind as to the selection of stations, should my time admit of connecting them with Panama, I ran over to the island of Casalla, where we could also witness the pearl fishery in full activity. Our good friend the consul accompanied us, and we there had an opportunity of test-

ing the powers of the most expert divers they could produce.

The depth on which they usually fish, is about five or six fathoms, the bottom uneven and rocky, or stony. The boat, in the present instance, being anchored in a tideway, the padron commenced by repeating prayers, in which he was joined by the rest of the crew, amounting to seven. This ended, they divested themselves of superfluities, and almost simultaneously inhaling a long breath, dived feet foremost.

The *average* time of immersion ranged from forty to forty-two seconds, and on reaching the surface, they had generally seven or ten oysters each, about the size of a cheese plate, *packed* from the left hand to the left shoulder, four being firmly secured between three fingers and thumb; all this is effected under water.

Upon offering rewards for those who could remain longest under water, we were only able at first to witness seventy-six seconds. But after a little practice, the padron remained beneath the surface ninety-six seconds, bringing up seven oysters from the depth of seven fathoms. From what we witnessed of his exhaustion, and the reports of others who repute him their best diver, I am strongly inclined to doubt the suspension of breathing, with *power of exertion*, for a longer period.

The fishery is carried on at their own expense and risk; they either sell the oysters, and open

them in the presence of the purchaser, at a real or less per dozen, or take the risk themselves; in fact, a novel species of gambling has arisen, in which many of us indulged without adding to our wealth; completely the reverse, for many of us, ashamed to have nothing to show, purchased pearls. One exception, however, occurred in the consul's servant, who turned up a prize worth, I was told, about forty dollars.

I examined the collections of several dealers in these articles, who reside here in readiness to purchase during the diving season. Some were enormous, as large as nine tenths of an inch long, by five tenths diameter, but pear shaped, and of bad colour. Indeed, none that I saw would be reckoned fine in England, and amongst some thousand large ones, very few were perfectly round.

The Yslas del Rey cover about four hundred square miles, and comprise numerous islets, and probably thirty or forty fishing villages. The quantity of pearls estimated at the season, is about two gallons.

Having returned to Panama, and landed the consul, we sailed on the 1st of November for Realejo, intending to verify the longitude of the Cocos in our route; but the heavy rains which we encountered in that direction, added to oppressive atmosphere and tendency to sickness, soon changed my plans, and every effort was made to make northing, and clear these unpleasant latitudes.

On reaching the latitude of 8° 40′ N. the cessation was abrupt.

The rains alone are sufficiently unpleasant at anchor; but the variable winds, calms, squalls, &c., calling for the constant exposure of the crew, added to the wear and tear of stores, are infinitely more harassing than months of heavy work in a dry climate.

CHAPTER X.

Realejo—Termination of the rainy season—Quit Realejo and repair to Chicarene—Gulf of Fonseca—Trip to San Miguel—Agua Frio—Reach San Miguel—Start to visit the Volcano—Demur at Chinameca—Return in disgust to San Miguel—Quit, and visit Moncagua—Breakfast—Arrive at San Miguel—The fair—Method of transacting business—Honourable conduct of natives—Run to Realejo—Meet H. M. S. Imogene—Return to Conchagua—Port of San Carlos—Ascend Amapala—Conchagua, &c.—Pitch observatory under Conseguina—Start with Starling and boats to examine Estero Real—Result—Swarms of Mosquitoes—Canal question—Volcano of Conseguina—Desolation caused by its eruption—Return to Realejo—A boat upset in a squall—Mr. Speck and a seaman drowned—Sail for the Gulf of Nicoya.

CHAPTER X.

On the 14th of November we reached Realejo, where the effects of the rainy season were still apparent, the residents informing us that the season had terminated only on the 4th. The 1st of November, then, may be safely assumed as the termination of the rainy season at Realejo.

Our stay here was but short, being anxious to commence the survey of the Gulf of Fonseca; and our consul, Mr. Foster, having consented to accompany us, and act as pilot to Conchagua, we quitted Realejo on the 17th November, anchored off the watering-place, Chicarene Bay, at nine on the morning of the 19th, and after obtaining observations on the point, proceeded by boat to La Union, (or San Carlos,) the town of the port of Conchagua, properly so called.

Here we found seven vessels at anchor, having brought cargoes for the fair at San Miguel, situated about forty miles in the interior, and at the base of the volcano of that name.

As reports were in circulation that the insurgent Carrera contemplated disturbing the proceedings,

and I moreover, the property at stake being chiefly British, I determined visiting the fair in my route to the volcano, which I contemplated ascending. The presence of the consul, officers, and myself might have an influence on his actions. However, on the eve of our departure, I had the satisfaction of learning from San Salvador, that he had been routed by the forces of the President Morasan, and was pent up in the mountains.

On the 19th, at six P. M., our party, consisting of the vice-consul, Mr. Foster, Lieut. Wood, Mr. Hinds, assistant-surgeon, and Mr. Selwyn, Mid., commenced our journey on very indifferent animals, the great demand leaving us no choice.

For the first stage our road lay through very uneven ground, which the darkness did not improve; and to the discomfiture of our junior, he suddenly found himself, by the failure of his animal at a leap, "rather ahead of his reckoning," and head downwards, in a pool or brook: he was fortunately extricated without injury.

It was intended that we should rest "*in campo*—" the customary mode in this country. But estimating, from the present condition of our beasts, what they might be able to effect on the morrow, under a broiling sun, I determined to push on another league and a half, and rather sacrifice my rest than risk the fatigue of dragging my mule. We, therefore, moved on and reached Agua Frio at one, and after considerable trouble succeeded in obtaining

shelter and supper. I believe I was the only one who had a roof over me, but had little reason to rejoice in this particular, as " las pulgas" assured me toll must be paid for such indulgence.

About four, our guides commenced saddling, and we were soon once more en route. The temperature during our stay ranged to 56°, and at the moment of starting, we enjoyed, with some few shivers, a fine cool air.

Our journey now lay through the mountains, the road being tolerable for mules. About nine, we reached the outer circle of the city of San Miguel, which at this period was occupied by a dense belt of about a mile of show oxen, horses, sheep, &c., the owners, drovers, or proprietors, having erected temporary houses amongst the trees on either side of the road. Many had brought their beasts to a bad market.

Here I met my old friend and host of Nagaroté, as before alluded to, who informed me that he could only obtain five dollars per head for show beasts, which he could sell at home for six, and this after driving, feeding, &c., upwards of five days' journey; in this country almost equal to their value. As they came for goods, it is not improbable that the intrinsic returns were of greater value than the hard six dollars.

Having passed through the cattle fair, and forded the river, which passes about half a mile on the skirts of the town, we entered San Miguel, and

found the heat, dust, and clatter, almost Babylonian. After considerable exertion, and forcing our way through dense crowds by the most circuitous passes, we at length reached the quarters of our allies, who were just commencing breakfast. As our despatches had not arrived, our appearance was rather a surprise, although welcome; and great bustle and activity were displayed to evince their sense of the addition to the alliance, particularly from our old friend, Mr. Bridge, of Realejo, who little dreamed of our re-appearance in Central America, when we took leave of him in March last.

Having called on the military governor and commandant, who received us very politely, and offered every assistance in his power, we returned to watch the movements of the fair, and make the necessary arrangements for ascending the volcano, that was majestically towering immediately above us, and apparently easy of access. But on this side it is impracticable, and some leagues must be travelled to gain its rear at the only point at which it has ever been attempted with success.

The governor, having assured me that there was not the slightest difficulty in the ascent, and that not long since an Englishman had succeeded in his attempt, furnished me with an order to the alcalde of Chinameca, six and a half leagues distant from San Miguel, directing him to furnish guides, men to clear the road, and to afford us every assistance. Thus duly prepared, we started with light spirits on

the morning of the 23rd; our party, Lieutenant Kellett, Mr. Hinds, and myself.

Passing through the village of Guelapa, two leagues, and Moncagua, three leagues from San Miguel, we entered Chinameca by a very steep descent at four in the afternoon.

The view descending this most picturesque valley, induced us to believe that the volcano might easily be ascended for some distance by mules.

A rather ominous delay prepared me for difficulty. A council of the village was summoned, and after their deliberation, the alcalde, ranging them before us, acquainted us that the road had been closed, and entirely broken up and choked by the last terra motu; that it could only be opened at a great expense and delay; and he threw such further obstacles in the way, that I clearly foresaw I could not rely on him or his agents; and as days were ages to me in value, I determined to employ my time to more advantage, by returning to the city the instant our beasts were in condition to move. I was still further disappointed by the difficulty we experienced in obtaining food for our beasts or ourselves, or even the common civilities afforded to travellers.

About midnight we remounted our mules, and after losing our way several times, at length reached the village of Moncagua at sunrise, where we were more fortunate in obtaining an excellent breakfast in the style of the country, consisting of eggs, tor-

tillos, chocolate, cheese, and milk, to which we did ample justice; and about ten reached San Miguel, much to the astonishment of the party we had left to watch our motions, who were anxiously straining their eyes, and frequently waving our signal-flag, momentarily expecting to trace us on the outline of the volcano.

The governor assumed the feeling of chagrin (which no doubt he felt in his way) at the conduct of the alcalde, but I could plainly trace an apathy, which satisfied me that his power over him gave him no *right* to resent such uncourteous reception as attended his letter.

Our attention was now directed to the city, and the great fair then at its meridian.

San Miguel is situated on a plain at the base of the volcano, which suddenly springs on this side to its apex; and is surrounded on its other sides by ranges of five to six hundred feet above its level, entirely excluding it from any prospect beyond their outlines. There is nothing in the city itself which calls for remark, and its consequence arises principally from the fairs held here for the purpose of transacting the indigo trade.

The fair at this season is that of most importance, as the "*settling period*," and may be compared to any of our great English fairs divested of their amusements and trifles. The visitors, however, in this case, come not only from the remote points of

Central America and Mexico, but also from Southern America, as low as Valparaiso, and even from Europe.

The great square, houses, and streets, are all closely occupied by booths, &c., containing every species of goods exposed for sale, and it was not without some degree of satisfaction I observed that the majority of capital was British. A few French light goods and trifles occupied some of the booths, but Manchester, Birmingham, and Sheffield carried the day.

The method of dealing throws some light on the character of these people, and the risks annually incurred. Goods to a large amount are given *on account*, to be paid for in indigo, at a certain period, generally the meeting of this month.

Indigo varies considerably in value, numbering from one to nine and ten, and at this meeting its *currency* is determined. Thus, the actual bargain is completed, by the payment in current indigo at this fair for goods supplied last year.

At this moment, when the states have *divided*, when they acknowledge no supreme authority, and when *might* may be *right*,—what volumes does this confidence adduce for the general probity of these dealers, who are men too not always above the middle classes—mere peasants.

On the cholera visitation, as might have been anticipated, losses did occur; but one or two noble

traits of just feeling are also mentioned, where the payment was cheerfully and duly made by parties not legally liable.

Where such immense property is at stake, it is generally considered necessary to turn out the military, and during day and night sentinels parade the square and main streets. After nine o'clock no one is permitted to traverse the streets without authority; and although the main square is occupied by at least one-third pulperias and gambling booths, where they also sleep en masse, I never witnessed so little noise or disorder in any part of the world.

Having mentioned the separation of the states of Central America, I will give a slight sketch of their present condition.

About a year ago disturbances commenced, having for their object the removal of the President Morasan. A short time afterwards, Carrera, the leader of the insurgent party, made head, and inculcated the idea of the separation and self-government of the several states, with greater personal freedom.

This has certainly taken effect, and the states at present separated comprise San Salvador, (with the president,) Guatemala, Honduras, Costa Rica, Nicaragua, and lately Los Altos, of which Quesantenango is the chief city.

Each state is responsible only for itself, or is in fact at present *headless*. Costa Rica and Nicaragua are preparing to resist Morasan, or even to pursue him; but this will never take effect. Under such

government the appeal to law is futile; a decision in favour of an appellant was adjourned *sine die*, as I lately witnesed at Realejo, and nothing but a hint of stronger measures likely to ensue on the part of Great Britain, brought them to their senses. The appellant was a British subject, and judgment was given in his favour *before* the separation of the states.

On the 25th, we set out on our return to San Carlos, situated on the south side of the port of Conchagua, and better known by that name. The site of the port is badly chosen, as the difficulty in landing at all times is great, and at low water nearly impossible; during strong northerly winds the communication is frequently cut off for days, independent of unsafe holding-ground for shipping. Near Chicarene this might have been entirely avoided.

The port is entirely land-locked—in fact a complete inland sea.

The actual town or village of Conchagua, from which the port derives its name, is situated about three miles up the Amapala mountain, or extinct volcano, immediately over San Carlos. The selection of this spot is said to have originated in the piracies committed on this race of Indians by the buccaneers. They were then located on the islands of Conchaguita and Manguera, situated at the mouth of the gulf. They then fled to this secluded spot of Conchagua, which is destitute of water, that necessary of life being daily carried up in calabashes.

The Indians are rather a well-formed race, and of a lighter cast of countenance and milder manners than their neighbours.

Our next excursion was to the volcano of Amapala, situated immediately above the port, and which has been extinct beyond memory or tradition. About four in the evening of the 26th, Lieutenant Kellett and myself quitted San Carlos, and reached Conchagua about eight. The road being very steep, how the mules contrived to pick their way, I am at a loss to imagine: by daylight it was no easy task. Having procured guides and calabashes of water, we continued our ascent until ten, when having reached a position sheltered from the strong winds then blowing, we took up our quarters in the grass until daylight, when we recommenced our journey, reaching the highest pine point about seven. As this did not suit for a trigonometrical station, we shifted to a peak, overlooking and commanding a view of every point in the gulf. Our operations on the summit were uninteresting, excepting in a magnetic point of view: they are recorded under that head. No remains of volcanic agency are to be traced; and it is probable that its conical form alone assigned to it the appellation of Volcan de Amapala. At its base, in Chicarene Bay, incrustations of sulphur and muriate of soda were observed, as well as several thermal springs, the temperature of the hottest affording 196° in the steam, and 212° in the jet. Bottles of this water were preserved.

The result of our barometric measurement gave the Peak of Amapala three thousand eight hundred feet above mean-tide level. The temperature on the summit at sunrise 63°, that at San Carlos being 86°.

On the 30th of November, we returned to Realejo to rate our chronometers, where we met her Majesty's ship Imogene, at the moment of her departure for San Blas, having been some days on the look-out for us. The letters brought by her were not of interest, being duplicates of twelve months date.

After an absence of only forty-four hours, we reached our anchorage again in the gulf, and vigorously prosecuted our survey, which was uninteresting in detail. At the term day, we pitched our observatory near the sea margin, at the base of the volcano of Conseguina or Quisiguina, and having completed the requisite observations, started with the Starling and boats, to explore the Estero Real, which I had been given to understand was navigable for *sixty miles;* in which case, from what I had seen of its course at my visit to the Viego, it must nearly communicate with the lake of Managua. After considerable labour, we succeeded in carrying the Starling thirty miles from its mouth, and could easily have gone further, had wind permitted, but the prevailing strong winds rendered the toil of towing too heavy.

We ascended a small hill about a mile below our

extreme position, from which angles were taken to all the surrounding peaks. From that survey, added to what I remarked from the summit of the Viejo, I am satisfied that the stream could have been followed many miles higher, and I have not the slightest doubt that it is fed very near to the lake of Managua. I saw the mountains beyond the lake on its eastern side, and no land higher than the intervening trees occurred. This, therefore, would be the most advantageous line for a canal, which, by *entire lake navigation*, might be connected with the interior of the states of San Salvador, Honduras, Nicaragua, and extended to the Atlantic. Thirty navigable miles for vessels drawing ten feet, we can vouch for; and the natives and residents assert sixty more: but steamers will be absolutely necessary to tow against the prevalent breezes.

Our men began to suffer severely from the bites of mosquitoes, which, after the day's toil, prevented their obtaining rest; and the lofty trees on the banks impeding any further efficient exploration towards the source, we commenced our survey downwards, which, aided by the strong breezes and tide, I was enabled to execute, from the Starling's foretop-gallant yard, in six hours.

I cannot comprehend why, with these plain facts to lead them, (and I know of many clever residents amongst them, none more so than Mr. Bridge of San Antonio,) so much time and money should have been expended in searching for other lines of communi-

cation, when nature points out that this should first have been attempted. It is possible our sworn enemies the mosquitoes may have something to whisper in the affair; but this is of trifling importance to residents. I am satisfied that they would have disappeared as we advanced. It is rather a curious fact that it was directly in this vein to windward that we were attacked on our journey to Moyotepita in March last. The evil, I must candidly allow, is of sufficient importance to our service to mar it entirely. The caprices of seamen are at times too strong to be controlled, and in the present instance one could not work with satisfaction, knowing that those around were suffering even from such diminutive enemies. Zeal may carry heads of departments through incredible difficulties, and even make them smile at them, but it cannot be looked for in the uninterested subordinates.

Setting aside, however, the canal question, or communication between the Atlantic and Pacific, I am satisfied that steam communication with boats of light draught, by this Estero, that of Honduras leading behind Tiger Island, as well as that above San Carlos towards San Miguel, (vide chart,) is of sufficient importance to justify the primary attempt, as a feeler, in order to ascertain what advantages may result to the greater undertaking. If these branches cannot supply shipping at Conchagua with exports, or meet the exigences of internal traffic, what is to repay the "canal adventurers?" In their

present state of disunion, discord, and internal convulsion, without funds, or responsible heads, the question must for a time sleep.

But to return to our survey, and the volcano of Conseguina, which nearly all of our establishment had visited, and which has become of some importance to this neighbourhood, from its occasional emissions of dust, ashes, and water. The verge of the crater, which is half a mile in diameter, is elevated about three thousand eight hundred feet above the mean level; thence the interior walls fall perpendicularly to a depth of about two hundred feet, when the bottom of the crater becomes flattish, with a small transparent lake in its centre. Vapour was plentifully emitted from its sides, and frequently jets of smoke rolled out, ascending, in calm, to a great height. The whole surface, after commencing the ascent, was more or less pervaded by sulphur springs, and in some places, even to its outer crest, was swampy from thermal springs. In one of the jets Mr. Hinds (our assistant surgeon) found the temperature at 212°.

Externally no outlet presented itself by which the floods which had deluged the low lands could have escaped, unless this huge caldron boiled over; and in such case the disruption of the soil would have been even more terrific than the utter desolation which prevailed. The ground would then have been torn into deep channels or ravines, instead of the distinct inclined planes for many hundred yards.

It is true that at its base numerous pits were

observed, which have probably been sulphur springs, and which were even now moist and incrusted with sulphur, from which the vapour still continued to ascend. The beds and sides too of the torrent courses were studded with small cup-shaped excrescences, evidently so many diminutive jets formed by the escape of the gas from the bubbling fluid, some being incrusted with sulphur, and others containing numerous balls about the size of peas.

The aspect of the ruins, extending over one entire side of the mountain, (for nearly three miles,) was truly awful—its contemplation indescribable; desolate beyond conception.

From the first spring of the mountain not a vestige of verdure could be traced. Huge trees stood, barkless, bleached, or scorched. Others of the largest forest kind were uprooted and strewed in wild disorder, as if washed by an ocean force into the channels by which the floods descended; but the whole surface, excepting these courses, presented, in a gradually descending slope of two miles to the beach, that clean even line observable in loose sandy slopes.

This evenness doubtless resulted from the fall of ashes and dust, which first filling the cavities, had then been smoothed by the water, or, subsequently, by the winds. It was evident, by the great masses of charcoal found embedded, as well as from trees half charred in the soil, that fire had preceded. On digging at our position, about ten feet above high water mark, we found the same loose soil and ashes

(chiefly fine pumice) at the depth of four feet and a half, and without any traces of original soil.

The surrounding ocean appeared to have partaken of the catastrophe; not a shell was obtained in the immediate vicinity by the dredges—nothing, in fact, but clusters of ashes, in which the sabella had formed their habitations.

On the eastern slope we noticed a very singular quadrangular elevation, of about twenty or thirty feet, which was at first mistaken for the base of an old crater. It was probably some building of the aborigines, possibly the walls of a village, intended for defence against the buccaneers, and at that period doubtless well screened from observation by the pre-existing forest.

On the extreme east a torrent had cut through a mound opposing it, to the depth of forty feet perpendicular, its stream appearing to have flowed towards the sea. In this region the vegetation appeared to flourish with great luxuriance, and a strong stream of very sweet but almost tepid water flowed into the sea.

No aperture in the volcano corresponded to these courses. From the extent of the course, the strength of this stream implied an underground force; and the water was also observed oozing through the soil in several other spots. The whole coast in this vicinity was so strongly impregnated with saline matter, as to incrust projecting stones or sticks with chloride of sodium. It could not be traced far inland, by reason

of the thick underwood. It is a curious fact that this water, although flowing through briny beds, was particularly delicious, and as I suspected that our thirst might deceive us, I caused a cask to be preserved and bottled. It kept better than other water, and preserved its purity; it contained no foreign substances, as it was evaporated to dryness without residue.

The last and awful effort of this volcano occurred on the 20th of January, 1835, and is thus recorded in the Journal of the estate of San Antonio, distant about sixty miles:

Jan. 20th, 1835. "This morning we observed the volcano of Conseguina (anciently called Quisiguina) vomiting an immense column of smoke and flame. At nine A. M. we experienced a very heavy shock of earthquake; the night following five shocks; and during the 21st we felt several, accompanied by noise resembling distant thunder, but known here as (in Spanish) 'retumbo.' On the 22nd the ground at day-break was covered with ashes or fine sand, which still continued to fall; darkness and continued roaring of the volcano prevailing.

"At one on the morning following a very heavy shock of earthquake was felt; at six, another, but slight.

"On the 23rd, day broke, the fall of ashes and sand having increased; the morning was very dark. However, at nine the same morning the fall of ashes, &c. continuing, it became darker than the darkest

Scenery of Coregliano, Gulph of Spezia

night, and continued so until three P. M., when it cleared a little so as to be able to distinguish objects, as you may during a moonlight but cloudy night, everything on this estate being covered with ashes to the depth of about five eighths of an inch or more, the atmosphere at the same time being charged with a powerful odour of sulphur and noise from the volcano, attended with thunder and lightning, resembling the roar of the sea during a violent gale of wind. At twelve o'clock this day, and at the darkest period, innumerable birds sought shelter in the house, supposed to be attracted by the lamps."

The whole of the desolate region before alluded to was, before this event, rich pasture ground, and abounded with some of the finest cedars, particularly the Cedro Real. The beach at present was thickly strewed with bleached timber, rendering the aspect still more dreary; indeed the painter might have taken a hint for "after the deluge" from the scene before us.

Amongst these trees and drift timber we found some cedar, which was applied to useful purposes.

Very good timber, both mahogany and cedar, may be obtained in this gulf; and from the forest range, pine if required, but rather of a knotty description.

In the mineral kingdom none but volcanic tufas and sulphur were noticed.

Of animals our list is but small. Deer were noticed, and were said to abound on Manguera, Conchaguita, and Tiger Islands. Rabbits, and

squirrels, with the addition of jackalls, may complete the list. Bullocks and other stock are easily procured at San Carlos, and prices moderate.

On one occasion, I had ocular proof of the presence as well as the vigilance of an alligator. I had fired at and killed some wild ducks, one of which fell on the opposite side of a pond. One of the boat's crew went in quest of him, but during the time that he was seeking for a pole to hook it out, the poor fluttering bird was put out of misery by the sudden snap of the jaw of an alligator. It was fortunate that the lad did not wade for the bird, or he might have chanced to take its place.

Wild turkeys were shot for the table, and several handsome varieties of small birds for the collection.

In conchology several rare shells (particularly the tellina burnetti) were taken; but this gulf is very poor in respect to quantity or variety.

On the 30th of December, having completed our examination of this gulf, we moved outwards, to continue our coastline to Realejo, and on the 31st commenced the survey with a light off-shore breeze. We had proceeded about twenty miles along the coast, when we suddenly shoaled our water and grounded; the ship had barely got her head off shore when a squall assisting us, she dragged off.

During the operation of reefing topsails, we observed the Victoria let fly all her sheets in a squall, and not being able to see the pinnace, (under the command of Mr. Colin Speck, mate and assistant surveyor,)

supposed that she had anchored to obtain observations. A suspicious uneasiness of the signal-man caused me to send him to the mast-head to find her; and not succeeding, I despatched Kellett in the Victoria, to rejoin the Starling, and look for her, proceeding on with the ship to Realejo, then in sight.

On the following morning, January 1, 1839, the Victoria rejoined, and I plainly foresaw was the bearer of bad tidings. She reported that the pinnace had capsized in a squall, and that Mr. Speck, mate, and J. Grant, seaman, had been drowned.

It appears that she was taken by a roller under the lee, at the same instant that the squall occurred, and her stone ballast (which I had taken out of her but a few days before, but which had been replaced without my sanction) shifting, occasioned her loss. Mr. Speck, and Grant, Lamphier, and White, seamen, made for the shore, which the two latter reached; but Mr. Speck observing the ship reefing, thought he was seen by her, and swam back to the boat, but having exhausted himself by taking a bareça to support him, was unable to hold on, although assisted for a considerable time by the coxswain. He at length gave himself up, and sank in one of the eddies following the rollers.

The story is strange and improbable, as he was an excellent swimmer, of great courage, and, as before noticed on the Libertad affair, was the person who volunteered, and succeeded in effecting the communication with the shore.

The Starling immediately despatched her boats

through the surf, and succeeded in extricating the boat and men, with whom she returned on the evening of the 1st.

This lamentable misfortune threw a great gloom over all, as Mr. Speck was a general favourite. To myself the loss in every respect was particularly severe. He had been gradually schooled under my own eye, had adopted my habits, and in proof of my satisfaction, I had bestowed on him the appointment of assistant surveyor; a situation which necessarily entails confidence and fellowship. Added to this: he was the last of my retinue from whom I could expect the assistance I so much needed.

After remaining at Realejo to recruit and rate the chronometers, we quitted on the 8th January, 1839, for the gulf of Nicoya.

The Starling was despatched to look after a rock reported by an American at Realejo; but, as usually happens with such reports, it was not found where stated to exist. Next to the reality, the position where it does *not* exist may guide navigators; and for this purpose track-charts have been rigidly attended to.

CHAPTER XI.

Survey of the Gulf of Nicoya—Its capabilities—Examine Bay of Honda—Quibo—Receive despatches at Panama — Future movements— Sail for the Sandwich Islands — Revisit Cocos Island— Examine Clipperton Rock—Anchor at Honolulu— Disposition of the king towards us—Funeral of Kinau, the King's aunt — The king and suite visit the Sulphur—Missionary influence and operations—The islands less frequented —The Orphan School — Rapid decrease of the population— Exports and productions.

CHAPTER XII.

On the 14th we anchored off the islands of San Lucas and Pan d'Azucar (sugar-loaf,) opposite to "Punta Arenas," by which appellation seamen generally understand the Gulf of Nicoya.

Punta Arenas was formerly the port of this gulf in the state of Costa Rica; but interested parties, whose property lay near to Calderas, about five miles southerly, on the eastern side of the gulf, managed to have the port or custom-house officers, &c., shifted thither. It is very unhealthy, almost fatal, to all new residents; and the higher authorities take care to excuse residence.

As our occupations kept us vigorously to the beach, the interior was not visited, and the village of Calderas only by Lieut. Kellett.

Our time from the 14th of January was almost a blank, as regards matter of record. We appeared to have lost sight of civilized beings entirely, and even the natives rarely crossed our track. The

interest of exploring this seldom visited gulf helped to keep up the excitement, and on the 17th, having completed our labours, we moved towards Panama, at which port all our thoughts centred, the hope of letters and immediate return to England being probably predominant.

Fire-wood, water, cedar timber, bullocks, and oysters, are to be obtained; the latter in banks dry at low water, above Venado, on the western shore; bullocks, either at Arenas, Calderas, or Verugate, on the western shore; water at San Lucas, or better and more easily at Herradura Bay, where the casks are rolled into a small lake *at the beach*, and vessels may safely ride close to the shore, by veering the whole cable with a warp to the beach. Wood may be cut anywhere by the crew, or more easily purchased at Calderas or Punta Arenas.

Our first halt was at the mouth of the Santiago or Pueblo Nueva, at the island called Magnetic Island, in March, 1837. Here we recommenced our survey of this river, following its branches up for some distance. The river takes its name from a small village, situated on the river Santiago, where the Spaniards probably first appointed the seat of government. The port is formed by a neck or island about three miles in length, which affords good anchorage for vessels of any class. Three larger streams discharge themselves into the main basin at the western end of this island, where the

apparent great entrance is situated, but so studded with rocks and shoals, as to be unnavigable for anything larger than boats. It is in fact an extensive archipelago, as most of the region towards the Chirique territory will be found to be on future examination.

A plan was made, which will prove interesting to those who may visit this port for refuge or refit; but water cannot be procured in any quantity. It may probably be found by digging wells. The natives generally appeared alarmed at our presence, nor could we induce them to bring off supplies. Had our visit been prolonged, no doubt this would have been dispelled, as after we fell in with a negro who understood English, they appeared anxious to sell pigs, poultry, &c.

Their principal article of trade is the sarsaparilla, that of this neighbourhood being esteemed of superior quality. The stream runs fresh at some miles up, but we did not either meet it, or succeed in finding the town. Sugar-cane of good quality was offered, and tortoise-shell, one of their articles of trade, can be procured at the season.

On the 4th March, 1839, we moved on to Baija Honda, another of our stations in 1837. Here we fell in with a few Chirique Indians sent to clear the land; but they also were very much afraid of having any dealings with us.

We found this to be a most capacious, safe, and convenient harbour, completely landlocked and per-

fectly adapted for refit, heaving out, &c., there being no tide or current. Water was in abundance at the beach, and nothing wanting but a town and civilization to render it a favourite resort; timber of every kind, and the best abundant. The islands at its entrance are beautifully adapted for defence, with but trivial labour. At this port we collected a large stock of parasitic plants in full flower, which continued to decorate my cabin for some time, until forwarded to England, where they arrived in forty-two days in good order.

Having heard much of Quibo and its advantages, I fully intended examining its bays, and for this purpose ranged along its eastern coast, until we found an indentation answering to one of our reports. Our soundings, however, decreased so rapidly from thirty-three to fifteen and aground, that we had sufficient occupation for the time in heaving off, in which we instantly succeeded by the Starling letting go both her anchors a short distance astern, and veering until she got our coasting cable fast, when we slipped off the bank as easily as she had glided on, the bottom being yielding sand.

Having landed, and obtained observations for fixing the position, we proceeded to examine the inlet, which proved to be merely an estuary, the sand-banks not having more than six feet over them, extending about two miles to seaward.

Nothing of sufficient interest inducing further delay, we bore up for Panama. The currents

setting us strongly to the southward, we were compelled to stand over to the eastern shore, and work up between the Yslas del Rey, or Pearl Islands; and it was not until the 14th, about midnight, that we anchored at Taboga. On the following day we received our despatches from our consul at Panama, and in the evening ran to Panama.

Nothing interfering with my stated intentions, of an earlier period, being contained in these despatches, I found that we must give up all idea of returning to England, and with an increase of energy make up our minds for another examination of the N. W. coast of America and the Californias.

I immediately resolved on proceeding direct to the Sandwich Islands, refitting, and moving north, to save all the available season. As another mail was daily expected, I determined on waiting for any particular instructions, and employing the interval in completing the work of this bay.

On the 26th the mail arrived, but as there were no letters for the Sulphur, we took leave of our Panama friends for the last time, and that night quitted for at least ten more months of suspense—at all events, that period must intervene before we could reach our despatches at San Blas.

The period of the rainy season was now approaching, and many unpleasant colds, and a species of influenza, attacked the greater number of us; added to which a very peculiar and distressing kind of prickly heat was prevalent.

Our course was directed towards Cocos island, but the variable winds and rains of this region delayed us considerably. We made the island on the 6th, but on the day following at noon, enveloped in heavy rain, we were not more than ten miles from our anchorage. At nine we anchored, all heartily anxious to escape a rainy season in our present jaded state. An American whaler, according to their praiseworthy habit of assisting any friend in view, sent her boats to assist in towing the Starling to her anchorage; but we were too far out to partake of her aid.

On the morning following, I landed to obtain observations, and the early part of the day certainly led me to anticipate all I looked for, but noon destroyed my hopes, the rain falling in a complete deluge. I succeeded, however, in obtaining the requisite data, and also witnessed the effect of the heavy rains on the streams; converting a very quiet brook into a turbulent rapid in the course of a very few hours.

On my last visit, I mentioned that three men were left behind by an American whaler. These had remained a considerable time on the island, but were eventually taken off by another whaler; not, however, without poisoning the minds of part of her crew, two of whom were induced to try a similar experiment, and were now almost reduced to starvation, notwithstanding the presence of their countrymen. The master, however, assured me of

his intention of giving them a passage to Payta, the lesson of the former characters leading him to assume severity to the last moment, as a warning to his own, as well as to the crews of other vessels.

Of the seeds planted by me just one year since, I had the satisfaction to find that the pumpkins were in a fair way to overrun the island, the present whaler having collected fifty; the vines were also at this period full of flower and young fruit. Of the other seeds, I fear that the hogs and rats destroyed them. This, however, did not prevent my sowing a fresh stock, and covering them well with stones.

At sunset we quitted this island. On the 11th, about nine P.M., we noticed several luminous bands on the surface, which upon examination proved to be shrimps, with their detached ova:* the latter having the power of a very rapid whirling motion, by the protrusion of their legs, &c., similar to the lepas, and emitting in their progress fluid phosphorescent tracks, like diminutive meteors, as if produced by an oily matter. White tern and a turtle were also noticed.

Light variable baffling airs prevailed, not allowing us to make more than fifty miles per day. It is certain that the currents in this region vary consider-

* Respecting these mistermed ova of the shrimp, I am induced, from having noticed them in all stages, and taken them up to the size of a pea in the eastern seas near Ceylon, to consider them a distinct crustaceous object not described.

ably; this we have ourselves witnessed. That a strong easterly current must prevail, our current bottle of 1837 will exhibit. The master of the American whaler we met at Cocos, who seemed superior to the generality of his brethren, informed me that previous to reaching the island on the 8th May, " he had experienced the strongest N. W. set he had ever noticed in these seas."

The existence of Clipperton rock, or its attendant dangers, not being a clear point amongst navigators, determined me on steering for it, either to verify, rectify, or obliterate it from its assumed position. That I did so, will probably be deemed fortunate, for the extent of its dangers was certainly unknown to us. Yet to day only, 8th May, 1839, have we made it one month from the Cocos, or about 1360 miles direct.

At dawn, the rock was discovered by the Starling and ourselves, at nearly the same instant, then distant about fifteen miles, and presenting, owing to the sun's rays playing on its nearest face, the appearance of a brig close hauled. Unfortunately, the light baffling airs of the last month, accompanied by rain, which have worn our gear as well as patience nearly threadbare, prevented our doing anything effective towards its survey until after noon, when the weather cleared, and sun and wind favoured our operations. The name, Clipperton Rock, certainly misled us, and had we made the point at night, with a fair wind, would, almost *inevitably*,

have severely damaged or destroyed both vessels. I certainly should have steered to pass it to the northward; merely assuming it to be a solitary rock.

Nothing in this name could lead a seaman to imagine a high rock, placed on the southern edge of a coral lagoon *island, three miles long* N. and S., by the same east and west.

Its description should stand thus: a very dangerous low lagoon island, destitute of trees, with a high rock on its southern edge, which may be mistaken for a sail.

This rock can be seen fifteen miles. In thick weather the low coral belt, which appears like sand, will not be distinguished until close to it. The breakers on the eastern side do not afford sufficient warning for a vessel to trim or change course. On the northern part of the belt, the land is a little raised, and appears to be clothed with something like grass.

There are two entrances, which at high water may be safe; but at the moment we passed, the surf was too heavy, and the reflux showed the rocks bare. The high rock is situated in latitude 10 °17′ N., longitude 109° 19′ W., the dangers from it northerly extending two miles easterly, and the same northwesterly. On the beach several large trees were observed, and an object which was thought to be part of a vessel near the western opening.

In the centre of the lagoon, as viewed from the mast-head, there is one large hole of blue water, and

a second belt is connected with rock, attaching it to the eastern side of the island. This *literally* constitutes two islands, formed by its two openings; *both* are on the *weather* side of the island.

No living trees were seen, but the whole island was covered with gannet, boobies, frigate pelican, and several kinds of tern, which had also been noticed in great numbers during the last week, at least five hundred miles to the eastward. From this an easterly current may be inferred, as these birds generally keep in its stream or tail course.*

No bottom was obtained by the Sulphur with one hundred fathoms of line, but the Starling had soundings with less than one hundred on the northern side.

Sharks, porpoises, and turtle, were observed together. The former annoyed us much by biting at our patent logs, for which one was taken, and made an example of. They were very large, and literally swarmed. In all probability they were attracted by a shoal of file, (balistes,) and other small fish, which had been feeding off our copper since quitting the island of Cocos.

On passing the meridian of Cape San Lucas, the true trade reached us. On the 19th of May, in latitude 13° 45′ N., longitude 124° 30′ W., the Starling was despatched by a different route, to seek for

* It does not follow, therefore, as a matter of course, as noticed by some writers, that the appearance of birds denotes land to windward; they are more likely guided by tide.

the group of islands so frequently reported to lie between 16° and 17° N., and 136° to 138° W.; ourselves taking a course to intersect former routes, by which means that portion of the world will have been pretty severely tested by the Blossom, Sulphur, and Starling.

As I believe our method of conducting such investigation, and indeed of all our tracks, may prove interesting, I shall here insert a description of it.

As it occurred to me that simple linear tracks of ships afforded but a very imperfect idea of the spaces *actually* investigated, and that islands might be passed unseen at night, I desired the officers, in addition to the hourly sounding with one hundred fathoms, and keeping the look-out men on the alert, to note at clear daylight, noon, and before sunset, the "visual radius," and at night, the distance at which they could perceive an island. On the track line, at the positions, at these instants, the circles of visual radius were struck, and lines or curves connecting daylight, noon, and sunset, circumscribed the actually explored spaces: parallels by night noted the connexion by dark. In this manner we are prepared, on inspection at any future period, without calculation, to meet any assertion that islands exist within those spaces.

It is not perhaps generally known, that surveying ships or vessels on scientific research are instructed to sound every ten miles, or every hour, two hours, or

time that her commander may think suitable, when making passages.

But to return to our investigation. No signs of land were observed, but birds were numerous, and it is strange that they, as well as mollusca, &c., *ceased at* the 140th degree. Reasoning from the inference I drew at Clipperton's Rock, "that the birds dwell upon the tail course of the current," and *that* being in this region westerly, I presume that within five hundred miles easterly, or about the 130th degree, this examination should commence.

The strength of the trade admitted of our averaging one hundred and eighty miles per day, and on the 29th May we made the island of Maui. On the day following, we passed along its northern side, and at four that evening sighted Diamond Hill of the island of Oahu. We ran under its lee, and hove to for the night; and at daylight stood into the entrance of the harbour of Honolulu, where the pilot meeting us, we crossed the bar, and anchored until the natives, already prepared on the reef, got hold of our hawser. Having furled sails, we tripped our anchor, and with a "four hundred man power," were quickly towed to our berth in the harbour.

We found our old friends heartily glad to see us, as indeed they ever must be at any arrival which tends to vary the monotony of their lives. But death had not been idle, and mourning weeds deprived some of the gayest of their cheerful

countenances. Kinau, the chief woman of this island, and aunt to the king, had also died recently, and still lay in state. All the chiefs of the neighbouring islands had been summoned to attend the funeral.

The king was absent, amusing himself in the valley, and it was suggested that he would not come down during my stay, as he had not done so to Captain Elliot, of the Fly. I felt satisfied to the contrary, and on the Monday following called in state. My reception was as warm as I could wish; no subject was introduced to interfere with the harmony of the meeting, and having promised to attend the funeral, and requested him in return to visit the Sulphur, we parted.

Why so much weight was attached to my influence over his majesty, I am unable to divine, but most certainly the king's anti-British advisers feared the conjunction; and when I mentioned his acceptance of my invitation, bets were taken that his masters would not permit him to come. I knew him, however, to be as self-willed as those who pretended to control him, and that unless they overcame him by intoxication, I could depend on his word.

The funeral of Kinau was appointed for the Wednesday following, and, accompanied by the consul and my officers, we proceeded to the house where the remains of the princess (now designated as Kahamanu II. by the missionaries) reposed in state. The coffin, which was six feet and a half long, by

three wide, and the same in depth, covered with crimson cloth and gilt ornaments, (similar to that of Rihoriho, made in England,) was placed on a bedstead; the curtains of which were black silk, trimmed with white lace. The body of a carriage having been removed from the wheels, the bedstead was adapted to it, thus forming a very handsome car.

We were received with great attention by the king and chiefs, and his majesty, in further proof of his goodwill, sent the order of the procession the day previous, to ascertain if I wished to make any alteration. The troops and militia, amounting to four hundred, were all well clothed in white uniforms. Their evolutions were admirable.

The king's body-guard, amounting to twenty officers in scarlet jackets, some few with epaulettes, tinsel, crape, &c., marched, with their swords reversed, on each side of the car; the troops, with arms reversed, preceded. The king as chief mourner, with the deceased's husband, and the other chiefs, followed the car, the residents, consuls, and officers, bringing up the rear. The concourse of well-dressed females (from all the islands, I imagine) in black silk mourning, astonished me. I am quite satisfied they equalled the number of troops.

The moment the procession advanced, the natives not included in the procession, but who lined the roads, (which had been previously strewed with

rushes, over which mats were laid,) commenced the *wail*,—a low noise which can only be compared to the shrill noise of the bull-frogs of America; and the buz of so many voices in such melancholy notes certainly did not diminish the solemnity of the scene. Many I noticed shed tears, and some I thought really wailed *in earnest*. Kinau, whatever her failings might have been, was much esteemed by her subjects.

The kahili, or feathered plume, and the badge of royalty, was carried on this occasion. It is constructed of the dark tail-feathers of the cock, very similar to the Chinese fly-dusters, or resembling the feathers worn by our regimental bands. It is, however, of great size, measuring as follows:—length of pole and plume, eighteen feet six inches; length of plume, four feet and twenty-eight inches in diameter.

On the car reaching the church, a thatched house about two hundred feet in length by sixty wide, the canopy was lowered, the troops marched through, and the car was placed abreast of the pulpit. The consul and myself were assigned seats with his majesty.

The funeral service in the native language, with a two hours' pălăpălā (discourse) was delivered by Mr. Bingham. He condescended to tell us pithily in English what the import was, and the procession then moved on to the royal vault, where the king

introduced me to his other relatives there entombed, viz. Rihoriho, and his queen, Kahamanu, and Nahanina his sister, to whom Kinau was now added.

Mr. Bingham then returned thanks on the part of the king, to the foreigners who had paid him the compliment of attending; the military fired three volleys *well*, and we then retired.

On Saturday the king installed the next sister of Kinau, known as "the big-mouthed queen," into the government of Oahu, which did not appear to be acquiesced in by the chiefs, and promised to become matter for further discussion.

The king, accompanied by the new gouvernante and suite, dined on board, and, there being no missionary present, enjoyed themselves very much, and behaved also with very great propriety. The king promised to accompany me to Atooi, which I was anxious to effect, as I wished to talk over with him several subjects which were of importance to himself and government, as well as to the foreign residents, and upon which he had asked my advice, which I ultimately sent on paper.

The evening before our departure he sent to say "that he felt the disappointment keenly, but the chiefs required his presence to settle the affair relative to the late appointment." I am satisfied that the true motive could be traced to the jealousy entertained by the missionaries, of the influence I might have over him.

He had everything packed, and was, I *know*, very

much chagrined at his disappointment. I was told he wept, — probably for passion, as he spent his evening at the hotel in rather unkingly style, scuffling with his companions, by which his clothes were somewhat damaged, and destroying articles of furniture, glass, &c., for which he would have to pay.

Is it not strange, with all the influence the American missionaries are said to have over the king, that it is not *properly* exerted to improve his moral character? To compass any object having for its end injury to the interests of their own merchants, they are keenly awake, and whilst they attempt to pursue a system (the *total* prohibition of wines or spirits even for table use of the consuls, &c.) which in more civilized countries has not been attempted by a more perfect system and vigour to enforce, they yet permit the *pattern*, by which all law acquires moral force and energy, to commit sins and inconsistencies, not only without control, but without expressing their opinions in that manly form, which they *pretend* their mission so imperatively demands of them.

Why is this? They are too fully sensible that if once the king and chiefs open their eyes to their true interests, their power, or rather tyranny, would rapidly decline. Since the year 1827, I have felt a great interest about this king and people, and it will probably be remembered by many, that I had some little influence at that period. I have watched the changes with interest; and as far as the king per-

sonally is concerned, I believe his heart to be good, and that the wayward disposition and excesses attributed to him, result solely from opposition. That he may be led I am certain, but driven never, if he can see any chance of successful resistance.

It may naturally be asked, what induces me to take so great an interest in the affairs of these islands?

My answer cannot embrace any official instructions, but I think that every Englishman must feel an interest in the fate of any flag which bears our national union in the canton. Indeed, it has frequently occurred to me, that I should feel very awkwardly situated if I should witness any insult offered to it.

The changes which have taken place since 1827, have been strongly brought to my recollection by conversations with the residents, during my two last visits. In 1826—7, it was considered a paramount duty (by the missionaries) to prevent the culture of the sugar-cane, coffee, cotton, &c.; and even the cultivation of the ground was deemed almost impious, where the earth spontaneously afforded sufficient to meet their necessities. At that period, however, the chief Boki owned a sugar plantation, and he was not to be trifled with; the sugar-cane flourished, sugar was manufactured, and coffee and cotton were progressing. It will hardly be credited, that one of the chief missionaries took an active part in destroying a considerable cane plantation; that the ground

was subsequeutly given for school or religious purposes; and that same individual is now cultivating the proscribed cane on the same ground! I will not venture to affirm that it is for his own profit; but I was so informed.

Another, with his own hands, destroyed some thousands of coffee-trees which were flourishing. It would be futile to dwell on the acts of men of this stamp, which, added to the following, can only be attributed to sectarian madness.

In a discourse at evening lecture, during our visit, the lecturer, in his attempt at illustrating the Divine Power, informed his audience, the white residents, "that God was all-powerful. He could instantly change them into horses, whales, ships, or even steamboats!"

It is really unfortunate, for the credit of Christianity in these seas, that members of the Church Missionary Society have not been sent to show them the mildness of true christian rule, instead of the tyranny of fanatics, who have already caused a disgust for the Protestant creed, and will probably, in the end, be expelled. Their forcible and tyrannous acts against the two French missionaries, as noticed in 1837, have recoiled upon themselves, and the Catholic religion is now, *per force*, tolerated.

Already the chiefs begin to see the necessity of change. New laws relative to the employment of the natives, who were groaning under insufferable tyranny, are about to be made. Formerly (or, pos-

sibly, at this instant) half the month was employed in missionary slavery, church building, &c.; one fourth, or more, in the service of the king or their chiefs; and scarcely time left them for respiration or recreation. How are they to subsist? To labour at their taro plantations (and this is severely prohibited on the Sabbath) would be perpetual slavery.

It is really matter of wonder, that a previously indolent race, as former navigators found them, even as late as 1822, could be broken in with such an iron hand, without rebellion. Did their brethren of the Society Islands submit to half this? No slavery under the sun deserves to be questioned so severely as that of the Sandwich Islands.

What idea can the chiefs have of the amelioration they were to experience from a change of religion? How can these islands rise in the scale of importance, if the climate and amazing fertility of soil which has been bestowed on them, is not to be made available? What have the missionaries done for them? This question is beyond my powers of reply. But I can safely assert that, in the years 1826—7, above eighty sail of whale ships, as well as traders, entered the port of Honululu; and that number was, I understood, present at one time. At this moment it is almost deserted. And, instead of the thriving plantations, which at that period promised well, we have now a great increase of spirit shops. Formerly the streets were clean and quiet, and it was rare to notice a native intoxicated. They in-

dulged freely in aquatic exercises, ablutions, &c., and were apparently free, happy, and cheerful; but a miserable contrast remains; they are now chap-fallen and miserable.

First, the absurd "port charges" prevented the shipping from entering the port for refreshment or refit. Secondly, the necessary supplies of fruit, vegetables, &c., could not meet the demand, by reason of the course of labour preventing the natives from even subsisting themselves, comfortably or adequately. And, as these supplies could be obtained more easily, at a cheaper rate, and without extra charges, at the other islands, particularly at Atooi, they generally embarked them there, and thus enriched the chiefs instead of the king.

In addition to their port charges, they had enacted very absurd laws, amounting to an entire prohibition on the landing of spirits or wines, even for the private consumption of the consuls, merchants, and residents; and this, too, without due notice afforded to the importers. To the white residents, and particularly to the consuls and their families, it was almost a denial of the natural wants and luxuries of civilized beings.

It was chiefly upon these questions that the king wished to obtain my opinion; and, from the short conversation which ensued, I am perfectly satisfied that he was willing to remove all difficulties.

It may appear presumptuous to assume, that my influence would have effected the necessary changes.

But I would merely refer to acts of last year, and to documents resulting therefrom, to show the weight which they attached to my opinion; and particularly to that expression of the king, "If we had some person with us occasionally, who would take the trouble to explain what we ought to do, as you have done, there would be no quarrels." Upon this ground, particularly, as well as from his former friendly expressions, I felt perfectly convinced that the king would be anxious to see me, although he might have been persuaded to stay away at the period of the visit of her Majesty's ship Fly, commanded by a person unknown to him, and probably taught to believe her visit to be of an unpleasant nature.

If I had been a free agent, and not compelled to move immediately to the northward, I am perfectly satisfied that I should have secured some beneficial changes. Indeed, they were partly promised; and I was not quite so much out of favour with the better class of missionaries as their enemies suspected.

The king, chiefs, and government are in debt; and the natives, to accord with their ideas, must work it out. At one time sandal wood, by a tax on the natives, brought in a tolerable revenue, but this was pushed to the extreme by the creditors, and the islands were nearly stripped. They are, therefore, reduced to cut firewood; but the port charges prevent whalers from taking it off their hands. There is *one* vessel at present undergoing repair, and she will probably call at some other island, where

she can obtain even the firewood at a cheaper rate.

The next act of the drama will be the retirement of the merchants in disgust. Left without revenue and without money, the king and chiefs will lose all power and respect; and at that crisis it is more than probable that a repetition of the acts of Tahiti will help the authors of their miseries in their removal to the barren shores, where they so kindly advised the authorities to transport Messrs. Bachelot and Short.

This I suspect is anticipated; several have already seceded from the mission, and are enjoying their rich farms. It has been fully proved that the soil is capable of producing anything that may be required from it; and, from the progress within the last year, it is very evident that had these islands been wisely governed, trade would have flourished, the merchants would have increased, and the king and chiefs would have had the command of wealth, instead of filling the humiliating position of debtors.

Much to the credit of the white residents, an orphan school for the instruction of the children of white residents, as well as those of mixed parentage, has been successfully established, and is supported by voluntary contribution amongst themselves, as well as by foreign visitors. It is under the direction of a Mr. and Mrs. Johnson, who appear to have devoted themselves very zealously to their charge; Mr. Johnson having for this end resigned his post in

the mission, the missionary board considering "that it did not come within their scheme or *authority*." Much stress might be laid on this latter word, the keystone of missionary zeal.

We visited this school, in company with the consul's family, and witnessed the practical method of instruction. The ladies take much interest in it; and the proficiency in the English language, needlework, and other useful occupations, is highly interesting, and reflects great credit on the patronesses and preceptors.

This promises to be of very great importance to the society, and even to the government, of these islands. Mr. Johnson and his lady may congratulate themselves on being employed in the most perfect course of missionary duty; and when the morose and austere declamations of their ci-devant brethren shall be heard no more and forgotten, they will be remembered as the original instructors of the aristocracy of these islands.

These children, speaking both languages, and brought up in moral habits and duties, will accomplish more, by their example and influence, on those about them, than could have been effected by any other course. They amount, at present, to sixty of each sex, not exceeding ten years of age, and are taught separately; the boys in the morning, the girls in the afternoon. There are some very clever and interesting characters amongst them.

The population of these islands in Cook's time was

estimated at four hundred thousand. In 1832 it had diminished to one hundred and thirty thousand. In 1836 to one hundred and ten thousand. Mr. Bishop, a missionary, attempts to account for this alarming decrease. But of the *fact* we ought first to be assured. An enormous decrease, however, since the days of Cook and Vancouver, is admitted by themselves, leaving numbers out of the question.

Mr. Bishop observes, "That the middle-aged women cease to have children, and that many couples have none. That, where they are so blessed, they die before they are two years old. In families of six, eight, or ten,* few survive the first year. It is a pitiable sight to behold their infants. Destitute not only of *warm* but of *every clothing*, the greater part of them are covered by sores and cuticular diseases, inherited or contracted from the uncleanliness of their parents or nurses."

In reply to these remarks, it is necessary to observe, that in savage life it will be found that the women bear but once in three years; those who number ten children should therefore, at least, be forty-five; a period when, in civilized countries, women cease to have children, and very rarely have them in savage life.

How did the race, in Cook's time, exist without warm clothing, &c.? But I will answer the result, or supposed result, to suit Mr. Bishop's purpose. Yes —it is owing to the introduction of *foreigners* that these cutaneous disorders occur. If the missionaries

* Does Mr. Bishop mean, where six, eight, or ten have been born?

had not caused the discontinuance of *cleanliness*, of *ablution*, constant *sea-bathing*, and proper exercise in men and women, as their natural habits pointed out, they would have been free from the evil in question.

As to the "want of maternal love and solicitude, the best medical skill, luxuries," &c., when did they possess them? It has been asserted "that it is an error to suppose that pagan nations can be converted and elevated with comparative ease." This, I suspect, would be entirely rebutted in the Southern Pacific. But on two instances, one Protestant, the other Roman Catholic, I think I can confidently rely.

By the testimony of the parties themselves, in the crew of the Bounty, the Tahitans immediately adopted the creed of their husbands. At Gambier's Group, we were informed that they are the purest race existing, and we knew them to be perfectly savage in 1826; probably cannibals. They assign this as their reason for selecting Wainwright and myself.

My impression, from the beginning, has been, that the natives of the Polynesian Group should have well-educated clergymen sent to them. To people of superior mind, respected and courted by all foreign vessels of war, great importance would attach. But what is the result at present? Vessels of war visit these islands. They do not choose to countenance over-zealous, half-educated sectarians, and refuse to associate with them; consequently, the

natives, who narrowly watch these minutiæ, suspect that they are not entitled to that profound respect which they endeavour *to force*, and which, moreover, is not expected *or sought* by their *superiors*.

I am satisfied that these people are to be led as easily as any other race; but, from being hitherto a bold unconstrained people, they are averse to compulsion. Perhaps the greatest excesses are committed within the missionary circle, which includes the king and chiefs.

In almost every case where a foreigner has married a native woman, her conduct has, to judge from the race, been peculiarly correct, and their children promise to be ornaments to the society of Oahu.

Of the royal blood of Kaméhaméhá, the present king, Kauikeouli, (floating in the dark blue sky,) will terminate the race, as no female of blood royal remains, and it is deemed peculiarly essential that the queen should be even superior to her husband in purity of blood and descent. The sister of Nahanaena died in December, 1836. He is married to Kalama, known as "the king's wife." She was a woman of inferior rank, being the daughter of the Admiral Nahikukui, who accompanied Rihoriho to England. The children of Kinau will probably succeed.

The next chief in consideration is Hoapili, governor of Maui, Molokoi, and Ranai. He is one of the king's friends and warriors, is seventy years of age,

and remembers Cook. His wife, Hoapili Wahine, (wife of Hoapili,) or Kanin (the cocoa-nut tree, from her stature,) is sister of the late Regent, Kahamanu I., and of governor Adams. She was a wife of Kamehameha I., and had several children by him. Kinau was her daughter, as also is the new Regent, Ka-ula-ohe, (the big-mouthed queen.) This giantess was known in the time of Vancouver, as Malaia. He is said to have given her the appellation of the cocoa-nut tree.

Kuakini, or John Adams, the governor of Hawaii, is the next in rank. He and Karimoku assumed about the same time the names of Adams and Pitt, the leaders of the two governments. He is a very intelligent and important personage in these islands, speaks and reads English, strongly advocates liberal views, and encourages settlers on his territory, provided they are respectable and steady characters. He employs a number of tradespeople at their callings, and produces leather, sugar, coffee, cotton, cloth, &c. He is a warm supporter of the king, and nothing is transacted of importance without his sanction. He is much esteemed by natives as well as foreigners. His daughter, a very fine young woman, educated in the consul's house at the time of our visit, 1826—7, was intended for the King's wife, but she died suddenly.

The other chiefs are of little importance. The third son of Kinau has been selected as the pet of the king, and will probably be named his successor.

His name is Alexander Rihoriho; he is a very fine boy, and very much attached to the English.

The following exhibits the value of the exports for 1837.

	Dollars.
Value of hides exported, the produce of these islands	20,000
Goat skins	6,000
Sandal-wood	10,000
Sugar and molasses	4,000
Salt	2,000
Paint oil, (kukui nut) (bancuda)	1,900
Sea otter skins (from the coast)	29,000
Exchange	50,000
Specie	25,000
Old copper, shells, &c.	20,000
Hides, (California and re-exported)	30,000
Total	197,900

In addition, there are light goods, as, tappa, (kapa,) mats, grass-bags, &c., not noticed.

The market affords every vegetable that can thrive in this temperature.

The mulberry has been lately introduced, and thrives amazingly; silk-worms from China as well as America are increasing rapidly, and have already produced very fine silk. Shortly, this promises to become a valuable export. There are many Chinese resident, to attend to all the pursuits common in China. One sugar-mill of rude construction (from China) produces about two hundred and fifty pounds per day. It is worked by horses. The

concern belongs to Mr. French, an American, to whom the king is indebted. He receives one third, the remaining two thirds go to the king, or are taken into account in liquidation. It is said that two hundred thousand pounds of sugar were exported from the islands this season: but the trade is yet in its infancy.

Rice grows well, but is not yet in the market.

Sandal wood only produced three thousand five hundred peculs this season; the average of former years was twenty-five thousand.

Sweet and Irish potatoes, four thousand barrels; maize, broom-corn, beans, and peas, one thousand lbs.;—consumed by sheep.

Cattle abound at Hawaii, running wild.

Horses abundant, imported from California.

Poultry plentiful.

Turkeys at Atooi very large, and cheap.

CHAPTER XII.

Quit Honolulu—Touch at Atooi—Signs of improvement—Sail for the north—Great numbers of marine animals—Touch at Kodiack—Natives — Observations — Visit Sitka — Enter the Columbia River — Present state of Astoria — Ascend the river to Fort Vancouver—Jealousy of the Indians respecting their dead—The establishment at Fort Vancouver—Colonizing the Wallamette—Relations with America and Russia—Great size of the forest trees—The Hudson's Bay trading establishment—Wreck of a Japanese junk—The crew seized by the natives—Other similar occurrences—Character of the Indians who compress the head—Influence on the mind—Sail for California—Settlement of Ross—Bodega—Unsafe anchorage — San Francisco—Sailing directions for the port.

CHAPTER XII.

On the 10th we quitted the port of Honululu, the greater part of our acquaintance accompanying us outside the bar.

From the great interest I have always felt for these people, it was not without regret that I quitted them at this moment, and not without some misgivings as to their future welfare.

The consul and family accompanied us to Hanalae, the port we visited last season in Atooi. Our passage was unusually long and tedious, and we did not drop our anchor until the night of the 13th. The rains, which had not visited them for some weeks, set in suddenly, and continued until the 16th, compelling us to work at great disadvantage, and marring our astronomical observations. Any place during such weather would be miserable, but the consul's house being situated on the summit of a ridge, with a clayey road to ascend, which at times might be more fitly classed as a rivule' ma-

te rially diminished the pleasure of visiting. Yet on its clearing up on the 16th, the earth dried rapidly, and the freshness of all around repaid us for the delay.

A very material improvement had taken place since our last visit. A new house had been erected, ground fenced in, and an extensive plantation of mulberry trees were in full vigour, preparatory to the introduction of the silk-worm. The cattle were in the same fine condition as when we last visited; large quantities of meat had been salted, and much butter cured. Of the cattle we embarked twelve, having already experienced their superiority over any I have met out of England.

Many inquiries were made after the king, and why he had not come, as one of his vessels preceded us with notice of his intention. They were much disappointed.

On the evening of the 16th we took leave of our kind friends at the consul's, and put to sea, experiencing outside a heavy swell, with light airs from N. E.

As the Starling might part during the passage, and my mind was not entirely made up as to the extent of my northerly trip, I directed her to repair to the river Columbia, and make the necessary preparations for its survey, as well as to make themselves acquainted with the entrance, in order to assist us in entering.

The wind continued to press us to the eastward

until the 24th, when we reached 164° of west longitude, in latitude 37° N.

Here we observed the customary sea-birds, with the addition of the diomedea. Cook notes a shag. Seaweed was reported, but on examination it proved to be bundles of anatifa, not attached to any foreign substances, but radiating from a centre. They were numerous, and disposed in massive streaks, very similar to the fucus natans, (or gulf-weed of the Atlantic,) and I have little doubt have been frequently noted as such. This accounts most satisfactorily for the presence of the birds, who may be said to be "in clover" comparatively; for the sea was studded with them for many miles. Upon close examination of the water, microscopic crustacea were also found to be very abundant. The anatifa were preserved. Temperature, air 65°, sea at surface 65°

On the 25th, the wind still pressing us to the north, and still in 164° W., with the chronometers performing to admiration, I determined on seeking the nearest landing on Kodiack, if the breeze did not favour me as far as the port of St. Paul, in the gulf of Tchiniat, where the Russians have a large settlement.

As some alarm had been expressed relative to our differences with Vancouver's longitudes, this was too good an opportunity to be overlooked. The change of temperature was keenly felt by all; the

more so, as the first fog was attended with drizzling rain, though the temperature had only fallen from 65° to 61°.

On the morning of the 27th, we observed procellaria, diomedea, &c., as well as masses of velella; the anatifa but scanty.

On the 28th we sounded with five hundred fathoms; temperatures as follows: all such experiments in the Sulphur are *bona fide vertical* depths, being obtained by a light boat; the line afterwards hauled in by the ship. Surface 63°, 5; air 66°; 100 fathoms, 44°; 200, 43°; 300, 39°; 400, 41°, 5; 500, 43°, 5; dew-point 61°, temperature 66°.

In the evening we passed through a compact body of velella, which produced a *bright green* tint on the mass, although their attached mantle is *dark blue*. I had an impression that the clear substance like isinglass might be soluble, but after long boiling in water, as well as alcohol and dilute spirit, it remained unchanged. Numbers of cinereous procellaria, with whitish breasts, as well as party-coloured porpoises, were also noticed.

I was informed that birds had roosted on our yards during the night, but unfortunately none were taken. I am not aware of the booby venturing into such high latitudes, and do not believe that either the procellaria or diomedea would venture to alight.

On Friday, the 5th July, 1839, we discovered land on the lee-bow, which clearly showed Vancouver considerably in error.

A press of sail was carried to reach Point Greville in time for observations the following day, and as the breeze seemed disposed to fail, I took the precaution to keep in soundings, and in a condition to land at the nearest point. About eight I dropped the stream anchor underfoot, and proceeded to land at the mouth of an estuary, from which I had observed a canoe to come off towards us.

The person in this canoe informed us that there was a Russian company's vessel in St. Paul's; but as a day's delay was important, and the island off Cape Greville, noticed by Vancouver, was within our means of triangulation, a better situation than that I had selected could not be found, as his longitudes had no reference to St. Paul's. Cape Greville he relies on.

The ship being in excellent position, was secured. Hooks and lines were issued to the crew, and they contrived to make the most of our visit, by taking cod and halibut.

At the spot where I landed I found a family of Kodiacks in the full enjoyment of the oily luxuries of the Esquimaux. Dogs, in the proportion of five to each human being, expressed their disapprobation of our presence, and posting themselves on the ridges of their respective huts, howled most unmusically.

The natives were evidently in fear; they were all females, from the grandmother downwards; and apparently not much superior to their guardians—certainly not so clean. The huts were situated at

the entrance of a large estuary, dry at low water, on the confines of which I could trace many others; and from the strong flow at low water, as well as its meandering for some distance within us, I have little doubt that the stream is supplied by melting snows, which at this period clothed the high lands. Indeed, I much doubt that they are ever free, as we found snow lying in the latter part of August and September in the same latitude, further east.

The valley, if one were not occasionally reminded of the cold by the above-mentioned circumstance, possesses a very romantic character, and was clothed in the customary bright verdure of the short northern summers. The position I had selected for my observations was about the centre of a long, sandy, or fine gravelly beach, forming a bar to the valley, and was elevated about twenty-five feet above low water—evidently produced by the frequent roll of the ocean above its present peaceful limits, and at a recent date, even over our position into the estuary, as drift wood was found on the inner slope, among the long grass.

On my return I had intended moving on to St. Paul's, but, much to my regret, calms put an end to this entirely; I therefore landed and obtained more complete data, and in the afternoon bore away for Sitka.

During my delay on shore the dredge was put over, and some interesting specimens, from thirty-five to fifty-five fathoms, obtained; amongst them were living terebratula.

The black and white alca, so common to the northward, were too shy to be shot. Several very handsome ducks were fired at, but were either too strong for our shot, or the distance to which they would permit our approach was too great. The fucus giganteus, which is common to these seas as well as about the region of Cape Horn, was very abundant, impeding our progress in the boats considerably. Albatross were plentiful, and whales swarming. The numbers seen spouting at the same instant were incredible. I can only compare them to the ricochet resulting from a broadside of a frigate.

On the 12th we fell in with an American whaler, Elbe of Poughkeepsie. She had been very successful, having taken sixteen hundred barrels, only two of which were spermaceti, or "right whale," (Physeter Macrocephalus.)

At dawn on the morning of the 16th we made Mount Edgecumbe, certainly a most splendid leading mark for this port,—and managed, during the ensuing night, to crawl up the sound until we got sight of the lighthouse. At four we fired two guns—the customary signal for a pilot—but none appearing, at six we repeated the signal, when he came off, and by eight we were safely at anchor in the outer harbour, having entered by the direct channel before the pilot reached us.

Our friends were diminished by the changes which had taken place, but the governor and lieu-

tenant-governor were the same, and received us with the same civility, although it was evident that there was a restraint which considerably checked the warm feelings with which I had paid my visit. They were anticipating hostilities, and some of the fairer part of the creation were shedding tears of anything but congratulation. This was soon explained, and they observed that they felt much relieved by our signal for a pilot, and observing us stand boldly in for the anchorage, for which we were sufficient pilots. But the pilot secures the assistance of boats, which is particularly necessary in this port, where the winds fail in an instant.

Nothing worthy of record occurred, our visit merely embracing observations to connect this meridian with Kodiack and the Columbia, and the verification of some important magnetic data which varied from those of other observers. These were satisfactorily corroborated. We experienced much kindness and attention during our flying visit, and on the morning of the 19th quitted the harbour. One of the vessels belonging to the company, bound to Bodegas and Mexico, was to have sailed with us, but having an indifferent pilot, she fell into shoal water, and remained behind.

We met a heavy westerly swell outside the gulf, similar to that of 1837, which made us very uneasy.

Amongst the changes which I noticed is that of a steamer, which has been added to the establishment, and in which the governor intends visiting

the ports within his jurisdiction. For this place, constructed here, (and her machinery from America,) she will be very useful; but compared with *anything* in Europe she is very poor.

Being (as usual) unfortunate in our breezes, it was not until the 28th that we reached the mouth of the Columbia, when Lieutenant Kellett, having descried us, weighed and stood out with the Starling to conduct us in.

Fortunately the weather admitted of our entering, otherwise the very imperfect sailing directions might have led us into danger.

The shoals in the entrance of this river have most materially changed their features within the last two years. Just at our last tack, which would have taken us safely to our anchorage, the ship tailed, and the flood forced her instantly on the bank, where it continued to press her inwards. Before any assistance could be rendered, the tide fell, and our anchors being already down, we had to await the night tide, when less sea prevails. She floated off on the flood, a breeze off shore having helped her, and anchored in security until the morning, when we weighed and ran up to our berth in Baker's Bay. Not so the Starling; in weighing (in ten fathoms) she tailed, and instantly lost her rudder.

I had not then decided upon taking her up to Fort Vancouver, but this now became necessary; and having seen the ship securely moored, and con-

structed a temporary rudder for the Starling, we started on the morning of the 31st for Fort George.

On the Starling's arrival, Lieut. Kellett communicated with Mr. Douglas, the chief of the Hudson Bay Company at Fort Vancouver, who very promptly sent us a guide, pilot, and interpreter; and Messrs. M'Leod and Birnie came down to call on him. The latter is clerk in charge of Fort George. Off this fort, the well-known "Fort Astoria" of Washington Irving, we anchored for the night. It has dwindled considerably since the Hudson's Bay Company took charge, who removed their chief establishment to Fort Vancouver, and allowed it to run to utter ruin. Not a vestige remains.

A small house for Mr. Birnie, two or three sheds for the Canadians, about six or eight in number, and a pine stick with a red ensign, now represented Fort George. Not a gun or warlike appearance of any kind remains. One would rather take it for the commencement of a village than any noted fort. The scenery is similar to that of all the northern coast—wooded to the water's edge, and differing little excepting in the varieties of pine. The outline is pleasing, but no field for the painter, there being no contrast of tints, and too stiff an outline.

The navigation is rather cramped, and it is really surprising that with so much capital at stake in shipping, &c., the company have not brought up a set of pilots, by which many thousands might

have been saved, independent of the creation of such an useful body of men.

After walking the bounds of ci-devant Astoria in company with Mr. Birnie, who explained where its lines formerly occupied, but where wildness and desolation now reigns, as well as examined the great fir mentioned by Douglas, Mr. Birnie accompanied us on board to dinner, and afforded us much valuable information respecting the river as well as the natives.

On the morning following we proceeded on our voyage through the intricacies of Tongue Point Channel, and after grounding occasionally, which I take to be according to practice, managed by sunset to find a soft berth for the night, on "an unknown spot where no bank ought to have been," according to our pilots.

This delayed us one day, because vessels grounding on the top of an evening flood do not float off with the returning day tide; consequently we were compelled to await the night tide, which is generally higher in the Columbia, by about *five feet*, and probably caused by the sea breeze which blows strong near sunset.

Our detention occurred close to the "Pillar Rock," considered the second stage in the journey up. There is but little to interest one here—all the river between this and Tongue Point, as well as ten miles above, being an immense archipelago of

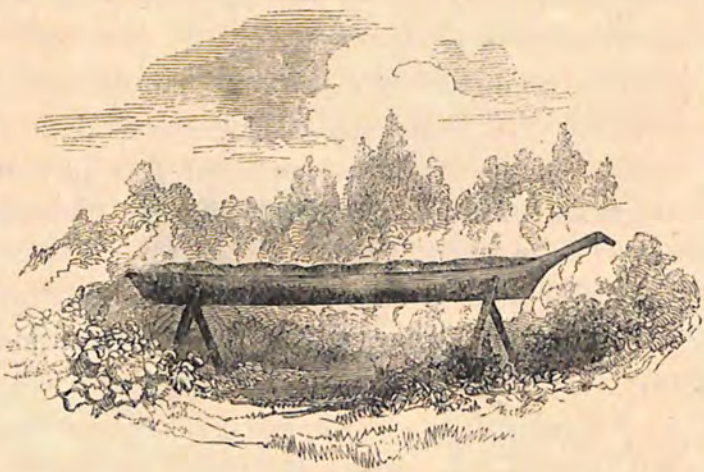
islands and flats. Pillar Rock rises abruptly from the river in five fathoms, and is about thirty feet above the sea level. The summit has an area of ten feet by five, with light bushes and long grass.

On the 5th of August we passed round the southern side of Puget's Island, and without anything worthy of remark reached Oak Point, where we anchored for the night. At Puget's Island the scenery may be said to change, the foliage being mixed with ash, willow, alder, maple, &c. I noticed the cypress also amongst the pine, but its timber here is of no value. Indeed I have not heard of the cypress of Norfolk Sound below that latitude, although the same tree in leaf, bark, and other characters, occurs here.

At Oak Point the river becomes narrow, and the navigation, from a general sufficiency of depth for vessels drawing fifteen to eighteen feet, is very simple; the breeze generally blowing up the river from ten A. M. until four P. M. At several of my positions I noticed numerous water-snakes, but they were harmless. They are termed "the fishing snake" by the people at Fort Vancouver, where I had an opportunity of witnessing their worrying a fish on shore, by seizing it by the pectoral fin, and *guiding* it into shallow water, and eventually on the mud. In one of the largest of these snakes we found several full-formed young, probably within a few days of their birth; proving these reptiles to be viviparous.

On the 7th we passed Corpse Island and Coffin Mount of Vancouver, positions deriving their names from being the burial places of the numerous Indians which once frequented these banks during the salmon season.

It is the custom of these tribes to bury each individual in a canoe; and according to his wealth so are they laden with his worldly goods; care being taken to render the greater part of the utensils, as copper kettles, &c., useless, by driving an iron bar through the bottom. The bodies are wrapped closely in mats, but I could not ascertain whether they make use of any particular preparation.



BURIAL CANOE.

Great secrecy is observed in all their burial ceremonies, partly from fear of Europeans; and as amongst themselves they will instantly punish by death any violation of the tomb, or wage war if per-

petrated by another tribe, so are they inveterate, and tenaciously bent on revenge, should they discover that any act of the kind has been perpetrated by a white man. It is on record, that part of the crew of a vessel, on her *return* to this port, suffered because a person who belonged to her (but not then in her) was known to have taken a skull; which, from the process pursued in flattening, has become an object of curiosity.

In the year 1836, the small-pox made great ravages; and it was followed a few years since by the ague. Consequently, Corpse Island and Coffin Mount, as well as the adjacent shores, were studded, not only with canoes, but, at the period of our visit, the skulls and skeletons were strewed about in all directions; and as I was on most of these positions unnoticed by the natives, I suspect the feeling does not extend much beyond the relatives, and then only until decay has destroyed body, goods, and chattels.

The chiefs, no doubt, are watched, as their canoes are repainted, decorated, and greater care taken by placing them in sequestered spots; they are propped up about six feet above ground, and well covered with mat, to defend them from weather.

On the 9th, after being nearly devoured by mosquitoes, we reached Fort Vancouver, where we were very kindly received by Mr. Douglas, and apartments allotted to us.

Fort Vancouver is situated in latitude 45° 35′ 53″ N., longitude 122° 20′ 10″ W., and, as the crow flies, eighty-two miles from Cape Disappointment, the northern head of entrance into the Columbia.

It stands about three hundred yards within the northern edge of the river; is a picketed enclosure three hundred yards square, the pickets being eighteen feet high, composed of roughly-split pine logs. No particular attention to strength has been paid in its construction. It is furnished with three gates, two of which are invariably open by day. The houses of residence, as well as storehouses of the company, are within this enclosure, forming two squares. No guard is observed. The trading store is open during working hours, and any increase of number amongst the Indians would not excite uneasiness on the part of the officers. Such was my impression: and conversation, short of putting the direct question, confirmed it.

In the eastern square the main building is occupied by the chief, in which also is the sala or mess-room. In front of the steps of this building are two long twenty-four pounders ship guns, and two short merchant ship carronades twelve or eighteen pounders. On the left, at right angles, are the quarters of the other clerks, traders, &c. Those who have married the Canadian half-castes generally live in their quarters, or only come to the general table when it suits. It is not a little strange in a community so long established, that the women should

still be almost totally unacquainted with the language of their husbands.

In the rear of the fort is an excellent kitchen-garden and orchard, occupying about the same space as the fort, (three hundred yards on its sides,) and behind this a large tract of cultivated land, with extensive storehouses, barns, &c., and abundance of grain in stack.

To the westward are situated, without the palisades, at a distance of a quarter of a mile, the hospital and houses of the Canadian establishment, forming a complete village. All is apparently defenceless; although when turned out, every man will be found with a well-tried rifle and couteau de chasse, or other efficient means of defence; and their partners are efficient helpmates, in the literal sense of the phrase.

Yet, comparing this spot with Sitka and other places, it speaks volumes for the discipline to which the Indians have been reduced, as well as for the *content* with which all the tribes are evidently embued.

As to the appellation of Fort Vancouver, it is clearly a misnomer; no Fort Vancouver exists; it is merely the mercantile post of the Hudson's Bay Company.

In the neighbourhood, about two miles down the river, they have a very extensive dairy, numerous cattle, sheep, pigs, goats, &c.; and about three or four miles up the stream, water-mills, for grinding,

sawing planks, and an establishment for curing salmon—the two latter objects forming the principal export to the Sandwich Islands.

The attention of the chief to myself and those immediately about me, particularly in sending down fresh supplies previous to my arrival, I feel fully grateful for, but I cannot conceal my disappointment at the want of accommodation exhibited towards the crews of the vessels under my command, in a British possession.

We certainly were not distressed, nor was it imperatively necessary that fresh beef and vegetables should be supplied, or I should have made a formal demand. But as regarded those who might come after, and not improbably myself amongst the number, I inquired in direct terms what facilities her Majesty's ships of war might expect, in the event of touching at this port for bullocks, flour, vegetables, &c. I certainly was extremely surprised at the reply, that "they were not in a condition to supply."

As any observation here would be useless, and I well knew this point could be readily settled where authority could be referred to, I let the matter rest. But having been invited to inspect the farm and dairy, and been informed of the quantity of grain, and the means of furnishing flour,—and notwithstanding the profusion of cattle and potatoes, no offer having been made for our crews, I regretted that I had been led into the acceptance of private supplies; although at that time the other officers of

the establishment had told my officers that supplies would of course be sent down.

Sturgeon, however, were in abundance; and though we had lately killed our last bullock, (embarked at Atooi,) San Francisco would soon be reached.

Some few years since the company determined on forming settlements on the rich lands situated on the Wallamette and other rivers, and providing for their retired servants by allotting them farms, and further aiding them by supplies of cattle, &c. That on the Wallamette was a field too inviting for missionary enthusiasm to overlook; but instead of selecting a British subject to afford them spiritual assistance, recourse was had to Americans,—a course pregnant with evil consequences, and particularly in the political squabble pending, as will be seen by the result. No sooner had the American and his allies fairly "squatted," (which they deem taking possession of the country,) than they invited their brethren to join them, and called on the American government for laws and protection!

This position has not only become the bone of contention which has again roused the Americans, but, from the fact of containing many of the old servants of the company unaccustomed to restraint, and whose first appeal is to their trusty rifle, is very likely to cause some trouble. They are now loud in their claim of right to the soil, and a colony of American settlers was *en route* in the plains when we quitted.

On the other river, Catlamet, they have two mis-

sionaries, one Protestant, the other Roman Catholic; but as this is a company's farm, and on the north side, I believe that there is no present fear of intrusion.

The territory has at length, by dint of British capital and perseverance, attained such importance, that America doubtless is anxious to open the field to her subjects; and having her eyes open to what has been virtually lost in an over-reaching attempt by the Astor Company, to obtain a value by negociation, for that which in a few hours would have been *public* British property *by capture*, she attempts to disavow the legality of the transfer. This renders the matter still worse, as, had the capture taken place, they might, with some plea of propriety, have looked for its restoration at the peace. But if *bona fide* purchasers are, at this late date, to be marred in their speculation, the *ultimate* consequences of which they doubtless *anticipated*, then must we bid farewell to good faith in mercantile transactions; for in no other light than that of a plain transfer of private property can it honestly be contemplated.

The possession of the trading post at Fort Vancouver (not the Fort Astoria, purchased from the Americans by the British Company) cannot in any way be questioned in reference to the Columbia territory. That boundary line must first be defined before America ventures to claim any point of the head-quarters of the Hudson's Bay company.

The Hudson's Bay company at present possess Fort

Vancouver; Fort George, at the mouth of the Columbia; Nasqually, in Puget's Sound, 47° N.; Fort M' Laughlin, 50° N.; (Milbank Sound) and Fort Simpson, at Dundas Island in 54° N.

In 1834, an expedition was fitted out (from Fort Vancouver) to establish a trading post on the river Stikine, which falls into Clarence Straits, and is situated in 56° N., 131° 10′ W.; but the Russians having notice of their intention, had erected a blockhouse, and placed one of their corvettes at the mouth of the river, to prevent their effecting their object.

By the treaty of 1825 (vide Appendix) completed with the Russian government, Articles 3, 6, 7, and 11, it was agreed that the Russians were to occupy from their outward boundary, viz., 54° 40′ N., and 131° to 133° W., a parallel band of thirty miles, above 54° 40′ N., but clearly reserving the right on the part of the British traders to "*freely navigate all the rivers which crossed the line of demarcation.*" And as it was moreover a prominent feature of that treaty, that neither party under any circumstances should have recourse to force, without first transferring the dispute to their government; a formal appeal was made to Baron Wrangel, at that period Governor of Sitka, but without success.

It is probably fortunate that this article tied the hands of our spirited northwesters, or the question of blockade would have assumed a very different feature. By this occurrence the loss to the company

was assumed at £20,000, but as the Russian government disapproved of the conduct of their governor, I am informed the question was satisfactorily concluded, and expenses recovered.

The timber of the Columbia, either for spars or plank, cannot be compared to that of the higher latitudes; for topmasts and topgallant masts it is probably as tough, but heavier; oak and ash are better. Probably no part of Western America can produce timber of the dimensions grown in the regions of the Columbia and the northern confines of California. Amongst the *drift* trees on the banks of the Columbia, we measured one, one hundred and seventy-four feet in length by twenty feet circumference; many one hundred and fifty by thirteen to eighteen. These of course were washed from its banks, and therefore not the largest, which grow invariably in the thickest parts of the wood. Mr. Douglas, in his narrative, gives the dimensions of one of great size at Astoria.

Being desirous of witnessing the powers of the hunters in carrying heavy burthens, which they are stated to perform through the fords, several of the strongest were duly laden with the customary travelling pack of four pieces, which may vary from one hundred and eighty to three hundred and sixty lbs. But the individual selected for strength carried five pieces of ninety lbs., amounting to four hundred and fifty lbs., a distance of seventy-three paces. He was not a man in full vigour, rather

aged; he barely performed the feat, staggering. Their hunting and trading parties were absent.

The company usually keep two migratory trapping parties, of fifty men each; one between the Columbia and the bay of San Francisco, near the coast; the other in the interior, about the head-quarters of the Sacramento. This latter party noticed us in the Sacramento in 1837, but mistaking us for the Californians, were afraid to make themselves known.

The vessels employed by the company are as follows; one steamer and four sailing vessels.

Barque	Columbia	310	tons	6	guns	24 men
	Vancouver	324	,,	6	,,	24
Ship	Neride	283	,,	10	,,	26
Sch.	Cadboro	71	,,	4	,,	12
Steamer	Beaver	109	,,	5	,,	26

The population in the employ of the company, including natives, &c., varies from five hundred and fifty to six hundred men and officers; but not more than ten native Indians are permanently employed. The hunters are equipped with hunting instruments, firearms, traps, &c., each outfit amounting to between £40 and £50 per man. The communication to Hudson's Bay in the March and September journey usually occupies three months and ten days.

The Wallamette settlement was commenced in 1830, by a few of the H. B. C.'s retired servants, which has increased up to the present period to fifty-four souls, or fifty-four farms. It includes

24 Canadians, H.B.C.

20 American stragglers from California.

10 Clergymen, teachers, &c., American Methodist Mission

There are also four other missionary stations, (all American.)

One at Dalles of this river.
——— Walla Wallah, 25 miles S. of Fort Nez Percez.
——— Clear Water River.
——— Spokane.

The average produce of the soil per acre is as follows;

15	bushels	Pease.
20	„	Wheat.
30	„	Oats.
35	„	Barley.

Which is said to be consumed in the country.

Garden produce—peas, apples, plums, peaches, strawberries, raspberries; and general kitchen stuff and potatoes, thrive, and are plentiful.

The trade of the Columbia consists chiefly in furs. Timber, salmon, butter, and potatoes, are exported to the Sandwich Islands.

The climate is pleasant, but rather unhealthy. The seasons gradually change, as in Europe; being temperate in summer, ranging as high as 95° to 100° in the shade, and in winter as low as 4°.

The prevalent diseases are fever, ague, and catarrhal affections. Consumption is frequent amongst the natives.

Having completed the Starling's refit, we commenced our return, surveying the river downwards. We had reached Puget's Island, when she unfortunately drifted on a snag, (or stump of a tree under

water,) and broke her rudder short away, taking with it the lower part, with all the metal work. On this occasion I merely despatched the requisite officers to Fort Vancouver with fresh demands, and moved downwards with the Starling to Fort George, where I purposed bringing the ship up to assist in the survey.

We met with several grotesque figures resembling our friends at Sitka, and one in the full dress of some volunteer militia band. He was in a very long canoe, fancifully carved. But the noted characters, as protegés of the company's officers, were the Chinook chief and his lady, well known as Choomamis and Sally. Their fishing village is on the north side, near Baker's Bay, at the entrance of the first creek. Blankets, and rum diluted four times, were the principal demands for objects; but these were very scarce, including skin boots, bows, arrows, salmon, sturgeon, deer, and paddles.

WRECK OF THE JAPANESE JUNK.*

We received from the officers of the Hudson's Bay establishment several articles of Japanese china, which had been washed on shore from a Japanese junk, wrecked near Cape Flattery. Mr. Birnie knew little of the details of the event; but, in the Appendix to Washington Irving's Rocky Mountains, vol. ii. p. 240, is the following account of it, in a letter from

* This as well as following detail relative to the compression of the skulls, were kindly presented by Mr. Hinds, assistant-surgeon.

Captain Wyeth:—"In the winter of 1833, a Japanese junk was wrecked on the north-west coast, in the neighbourhood of Queen Charlotte's Island, and all but two of the crew, then much reduced by starvation and disease, during a long drift across the Pacific, were killed by the natives. The two fell into the hands of the Hudson's Bay Company, and were sent to England. I saw them on my arrival at Vancouver in 1834." Mr. Birnie states, it was at Cape Flattery, and not as above; and on this point his local knowledge makes him the best judge. "There were," he says, "two men and a boy purchased from the natives. As soon as it was known that some shipwrecked people were slaved among the natives, the Hudson's Bay Company sent their vessel Lama, Captain M'Neal, to obtain them by barter; and there was some trouble in redeeming the boy. They were subsequently sent to England, and thence home; but their countrymen refused to receive them." Further my informant could not acquaint me.

By the winter of 1833, Captain Wyeth means, probably, the commencement of that year, as will presently appear more likely. There had been many people on board the junk, but distress had greatly thinned them; and several dead bodies were headed up in casks. About the same time another Japanese junk was wrecked on the island of Oahu, Sandwich Islands. From the Hawaiian Spectator, vol. i. p. 296, I have the details. "A junk laden with fish, and having nine hands on board, left one of the southern

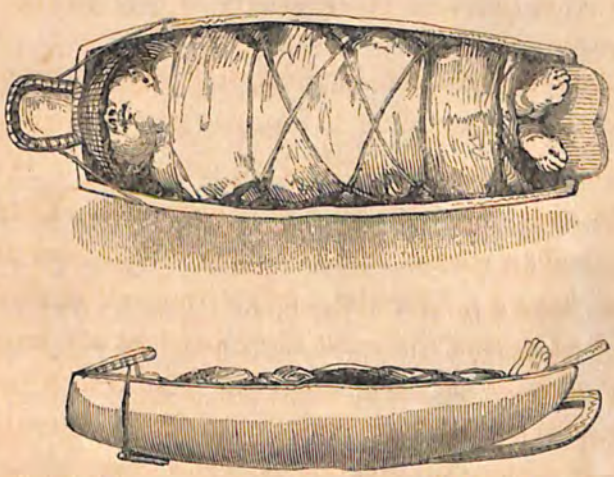
islands of the Japanese group for Jeddo, but, encountering a typhoon, was driven to sea. After wandering about the ocean for ten or eleven months, they anchored on the last Sunday of December, 1832, near the harbour of Waialea, Oahu. Their supply of water during the voyage had been obtained from casual showers. On being visited, four persons were found on board; three of these were severely afflicted with scurvy, two being unable to walk, and the third nearly so. The fourth was in good health, and had the sole management of the vessel. After remaining at Waialea five or six days, an attempt was made to bring the vessel to Honolulu, when she was wrecked off Barber's Point, on the evening of January 1st, 1833. Everything but the crew was lost, with the exception of a few trifling articles. The men remained at Honolulu eighteen months, when they were forwarded to Kamtschatka, from whence they hoped, eventually, to work their way, by stealth, into their own country, approaching by the way of the most northern islands of the group. "When the people (Hawaiians) saw the junk, and learned from whence it had come, they said it was plain, now, whence they themselves originated. They had supposed before, that they could not have come from either of the continents; but now they saw a people much resembling themselves in persons, and in many of their habits; a people, too, who came to those islands without designing to come; they said, 'It is plain, now, we came from Asia.'"

A wreck likewise occurred in this bay many years ago, before the whites occupied the country; which is considered to be a similar occurrence. But it must be observed, that since the wreck of the junk near Cape Flattery, the current of conjecture on this subject is, probably, highly Japanese. It appears that a vessel with many hands on board, and laden with bees'-wax, entered the bay and was wrecked; she went to pieces, and the crew got on shore. Many articles were washed on shore, and particularly the bees'-wax. This latter is even now occasionally thrown upon the beach, but in smaller quantities than formerly. I have one specimen now in my possession.

THE CHARACTER OF THE INDIANS ON THE COLUMBIA PRACTISING COMPRESSION OF THE HEAD.

Among primitive nations, it is not uncommon to find them attempting to improve nature's handiwork, by some peculiar method of distortion. We will pass over the Chinese and Europeans. They condescend to control the feet and waist: our friends here have a nobler aim, and set to work on the head. In that part of the coast more particularly known as the north-west, it is universal with the women to incise the lower lip, and, by gradual distention, to insert a piece of wood of no small dimensions, even to upwards of two inches in length. When this is removed, a second mouth is exposed, rivalling in dimensions the first. And even this practice has its

fashion and variety. The custom of compressing the head in infancy is not practised here extensively. On the coast it is limited to a space of about one hundred and seventy miles, extending between Cape Flattery and Cape Look-out. Inland, it extends up the Columbia to the first rapids, or one hundred and forty miles, and is checked at the falls on the Wallamette. In this small compass there are several tribes having this one distinctive badge. Those with whom travellers are most likely to come in contact are the Chenooks, Clatsaps, Killimooks, Chee-hee-lees, and Shlakatats. We first witnessed the practice in the house of Choonamis, a chief of the Chenooks. The infant, very soon after birth, is placed horizon-



tally in a small wooden cradle, wrapped up in a fur, and lashings are repeatedly passed across it, so as to

render the body nearly motionless. At the top of the cradle is a well, rather below the level of the rest, in which the head is sunk, and compresses are fitted in between the head and the extremity of the box, till the required pressure is produced. The compresses were of basket work, and some were ornamented with bells. I imagine the children do not suffer much. We saw one placed in the machine. It cried at first, as a baby in England would when put in a cradle, but a little rocking soon quieted it.

The practice would not appear to be prejudicial to the development of the mind; and the testimony of those long acquainted with these people supports this opinion. As a nation, the first thing that struck us was their facility in picking up our words, even to short sentences, and repeating the whole tolerably correctly. Their pronunciation is also good, though the intonation of our respective languages is widely different. The women are always plying their fingers over some basket work, or constructing mats. Formerly both sexes spent much of their time in carving rude figures of men or animals; but their communication with Europeans is yearly rubbing off some old custom. They are fond of colours; the women construct showy leggings with cloth and beads, and the men often display gaudy shot-belts and other articles of the chase. Like all Indians, they are patient in the pursuit of an object. They will dub away at a tree for months, till it becomes a

SLATE PIPES.—CARVING OF THE NATIVES OF NORTH-WEST AMERICA.

canoe, and then sell it for three blankets. They are exceedingly lax in morals, and attached to spirits; yet, we have found them undeviatingly honest. Their forms of religion would appear few. In their houses they have some few wooden images, and to imply their functions point to heaven. Parental affection would not appear strong. Abortion is much practised. They have usually very few children. These they display some affection for, which is often indifferently met by the offspring. Towards their dead they exhibit the greatest respect. After death the body is placed in a canoe, wrapt up in mats; the whole is then covered over, and the worldly property of the deceased is placed near him. They will not allow strangers to approach the place of sepulture. Curiosity must be gratified at a respectful distance. The entombed bodies are placed in open spaces in the woods, often near a foot-path; but we were not allowed to overstep the road towards them.

As they advance in age the flattening becomes gradually removed; thus, few persons of forty or fifty have a very compressed head. The children often have heads twice as broad as long, but nothing like this have I seen in advanced life. The compression is carried to a greater excess in persons of high rank or caste than in others; thus, the chiefs and their wives usually have the flattest heads. Slaves, and their children, are not permitted the practice. The operation is usually completed under a

year. The Indians called Flatheads live on the upper branches of the river, and, we were informed, have

not this practice—*lucus a non lucendo.* It is, however, not quite confined to the Columbia.

The Starling being again complete, we dropped down to Baker's Bay, taking leave of our friend, Mr. Birnie, in charge of Fort George, who had been unremitting in his attentions. On the morning of the 14th September, we quitted Baker's Bay, with light breezes, but, owing to the peculiarity of the currents, did not clear the heads until the wind failed, compelling us to anchor.

Before the tide had done, the sea-breeze came on strong; very fortunately, I had taken the precaution to reef and be in a condition to beat out, and had just completed, when the strength of the breeze

parted our cable. Sail was made in time to tack short of the dangers, and as the opposite course led to sea, I was heartily glad, after this second escape, to leave the anchor, and get clear of this disastrous port.

Any attempt to recover the anchor would have proved futile, and probably resulted in losing the only one remaining, with imminent risk to the ship. The Starling *at the same instant* met with a similar accident, leaving also her last anchor but one.

Heartily sick of this nest of dangers, we took our final look at Cape Disappointment, and shaped our course for Bodega. We arrived on the morning of the 20th September, in a thick fog, off the settlement of Ross, (of which Bodega is the port, distant about thirty miles southerly,) and having stood into fifteen fathoms, we suddenly observed the trees on the heights over the fog, and presently, on its clearing off, found ourselves within gun-shot of the settlement. The signal being made for a pilot, but not answered, the Starling despatched an officer to the fort, who brought off two, and we then bore away for Bodega, where, leaving the Starling to commence its survey, we parted for San Francisco to secure the meridian distance.

Night and fog, however, shut us out, and having twice found ourselves in very awkward positions, we were compelled to anchor until daylight.

About ten A.M., getting a glimpse of the land, we weighed, and shaped our course for it, the fog clearing as we entered the heads. We passed our Russian

friend, the corvette, which we left at Sitka, and ran on to our old anchorage. We found here the governor of Ross, Mr. Alexandre, an old acquaintance at Sitka, who was here for the purpose of purchasing grain, &c. His expressions of regret at being absent during our visit at Bodega, were very warm, and I believe sincere; but the same feeling of distrust, arising from the anticipated rupture between Russia and Great Britain, appeared to produce more than ordinary reserve. I am satisfied that some of the residents had bantered him upon our speedy departure, having for its object the capture of the corvette outside.

Having succeeded in my observations, I sailed again that evening, and reached Bodega after an absence of only forty-eight hours, where we were doubly fortunate, in obtaining the sun, and securing its position, fogs frequently reigning for several days in succession.

The openness of the bay, and the reported dangers of the anchorage, prevented my absenting myself from the neighbourhood, or I certainly should have paid a visit to the Russian settlement at Ross. I was also very anxious to take advantage of the fine interval to secure the survey of the bay. I am, therefore, indebted to a friend who resided there a few days for part of the following description; part is from my own observations by telescope.

The Russian presidio of Ross (little Russia) is situated about thirty miles to the northward of the

bay, or port, of Bodega, on land elevated about one hundred feet above the sea, the outline of which is cliffy, with alternate rocky and gravelly margin, rendering landing, excepting in very fine weather, nearly impracticable. The anchorage off is bad, by reason of beds of rock above and below water, and the constant liability to fogs, rendering it unsafe to break ground, unless with a fair wind.

The hills above it, which command the presidio, are sparingly clothed with fir trees. The main government establishment, or fort, as such enclosures are termed in these countries, consists of a large square, fenced in with strong planks of fifteen feet in height, and furnished with block-houses or watch-towers at two angles; one commanding the sea, and the other the land sides, or covering the east, south, and west faces.

These towers, armed with three guns each, in a second story, are on a level with the top of the fence. Within the square are contained the company's warehouses, the governor's house, a dwelling for the officers, and a chapel.

The square has but one entrance, which is by large folding gates towards the sea. The governor's house is situated at the back of the square, facing this gate, the officers' houses and chapel on either side. The gate is guarded by a sentinel with a cutlass, and at night it is closed. This sentinel has no uniform, but is one of the company's establishment,

which, in 1836, amounted to three hundred, and who live without the inclosure. On the N. W. are situated the stables for the cattle, a large granary, with a threshing machine capable of cleaning one hundred bushels of corn per day; a windmill; and to the southward, in a deep ravine which partly forms the bay, are three large tiled buildings, containing forges, carpenters' shops, and storehouses for boats and fishing craft.

Besides these buildings, there are on the slope of the hill, about twenty huts for the Kodiack Indians, of whom the establishment generally employ about fifty to sixty, in their skin boats, some of which are capable of containing one hundred men, and carrying about seven tons. They are constructed similarly to the old English coracle, viz., of strong boat-shaped frames, sharp at each end, over which the skins of the sea-lion are tightly stretched. Those to the northward of the Aleutian chain are covered with the skin of the walrus.

In the centre of the yard or square, in front of the governor's staircase, a brass nine-pounder gun commands the gateway, and within the governor's hall is the armoury for the establishment, which is well stored with cutlasses and fire-arms.

Between this presidio and Bodega, the Russians have a small rancho, (farm,) from which they reap in a favourable year as much as three thousand bushels of wheat. This is probably the farm in dispute, which report gives out to be the property

of a ci-devant British subject. The Californian government are, however, too weak to contend even with any half dozen adventurers, and it is needless to ask for their interference.

Bodega is an extensive bay, almost joining (by a creek) the port of Sir Francis Drake at its southern end, which is very shallow. On the northern side of the bay, at a small creek or estuary, (nearly dry at low-water springs,) stand two Russian buildings;—one a store-house, the floor of which was filled with grain and a few marine stores, and the other the residence of those left in charge, amounting perhaps to three men, their wives, and children.

The anchorage is within a rocky islet, with a reef and bank extending about three quarters of a mile, which is covered thickly by fucus giganteus. The bottom is coarse sand, with some patches of clay, but bad holding ground. Here, however, it is customary for the Russians (who have excellent ground tackle) to ride out the south-west gales, inasmuch as the heavy swell which immediately tumbles in, or generally precedes, prevents any moderate sailing vessel from making any head, and the sea-room is but scant. I am informed that the Russians have experienced several losses here, but no lives.

At the houses, excellent water, carefully conducted by spouts, for the convenience of hose, which allow of filling without removing the casks; and although we found the runs small, yet being steady and continuous,

they afforded employment for two boats. I am satisfied, also, that it is as good, and more expeditiously obtained than at Sausolito, San Francisco, where it is necessary to fill from wells, and injure the boats embarking it.

Having made a survey of the anchorage as far as the fog permitted, and being anxious to save better weather on the southern coasts of California, we quitted Bodega in a thick fog, and pursued our course to San Francisco. Fortunately it cleared sufficiently to round Punta de los Reyes the same afternoon, and to enable us to get well towards the mouth of San Francisco. One hour longer daylight would have ensured our entry, but being on the bar in four fathoms, with a heavy swell, and unable to make out the coast line, I was reluctantly compelled to haul to the southward in fifteen fathoms, and anchor until daylight.

Dawn found us still enveloped in fog; not even the Starling in view. Our delay enabled us to determine, that southerly of the fairway line, (Alcatraz and the fort in line,) the ebb tides set N.N.E., flood, S.S.W.

About ten we got sight of the land, and ran in, the breeze freshening, as it generally does on entering the heads. This is a very common occurrence at this port, requiring small sail to beat out, and suddenly losing the tide and breeze together. It is, therefore, advisable to keep the fairway marks open until reaching the bar, before hauling to the south-

ward, by which more wind will be procured and unpleasant swells escaped.

We found our Russian friend, the corvette, at the outer anchorage, still waiting to get out. We grazed her pretty close, but her officers were either absent or did not make their appearance, and we passed on to our anchorage at Yerba Buena.

Our stay here merely enabled us to take in a supply of bullocks and vegetables, and complete observations confirming those of former visits, when we moved on to Monterey.

Before taking leave of this port, I would remark that, although my readers may fancy I have kept them too long in fog, to nautical men these very dates and observations may be important. Considering myself a fair pilot for this port, I would say to those approaching it; after decreasing the depth from thirty to fifteen fathoms *mud*, if the wind is light, it is advisable, or preferable, to anchor and wait for daylight, or fog clearing off; but be prepared to weigh and stand off should the wind freshen. But do not go beyond thirty fathoms. The breeze always dispels the fog. And do not desert a safe harbour, when an hour or two will show the road in.

CHAPTER XIV.

Arrive at Monterey—Move on to St. Barbara—Kelp line—St. Barbara—Move on to San Pedro—Starling despatched to San Buenaventura—San Pedro—Touch at San Juan—Starling despatched to examine St. Catalina—Anchor at San Diego—Description of the port—Alarm from Indians—Defenceless state—Country wines made at San Luis Rey—Quit San Diego—Pass Cape Colnett and enter San Quentin, or Puerto de las Virgines—Touch at San Bartholomew—Enter and anchor in Gulf of Magdalena—Fossils—Esteros—Extent of Esteros—Probable connexion with La Paz—Adapted for naval rendezvous—Cape San Lucas Productions—Reach San Blas—Quit and anchor at Mazatlan—Return to San Blas.

CHAPTER XIV.

On the 5th of October we reached Monterey, having parted from the Starling, and experienced fresh breezes. However, knowing my ground well, I had no hesitation in anchoring. We succeeded in completing our observations, and beat out the following morning.

As my first rendezvous was Santa Barbara, I sought the Starling in that direction, where I found her cruising to intercept me. Off this part of the coast we experienced a very extraordinary sensation, as if the ship was on fire, and after very close investigation, attributed it to a scent from the shore, it being much more sensible on deck than below; and the land breeze confirming this, it occurred to me that it might arise from naphtha on the surface. Vancouver notices the same smell.

We reached our anchorage in the bay of Santa Barbara about nine on the night of the 9th, having been assisted by lights displayed on board one of

the vessels, to which I had despatched a boat before dark. At sunset we were unable to discover the bay, and could barely distinguish a long, low, yellow line spitting to the southward and terminating abruptly. This eventually proved to be the high yellow cliffs of the western head, at least fifty feet above the sea.

The customary guide in approaching the coast is the "kelp line," which generally floats over five to seven fathoms. So long as a vessel can keep on its verge there is no danger; this is the general opinion of those who have navigated this coast during their lives, and our observation has tended to confirm it. I know, however, that less than *two fathoms* have been found *within* it, barely at its edge. It is the fucus giganteus, and sufficiently strong to impede steerage, if it takes the rudder.

The mission at Santa Barbara is situated on an elevation of about two hundred feet, gradually ascending in about three miles from the sea. The town is within a few hundred yards of the beach, on which the landing is at all times doubtful. The bay is protected from northerly and westerly winds, which prevail from November until March, and the swell is in some measure broken by the islands of Santa Cruz, Santa Rosa, and San Miguel, to the westward. In March the southwesters blow with fury, which is contrary to the seasons southward of Cape San Lucas. Even during the fine weather months, vessels are always prepared to slip

when the wind veers to S.E., from which point it blows with great violence, but soon expends itself.

We were fortunate in landing comfortably, and by four o'clock, nothing of interest detaining us, we moved on towards San Pedro.

Vessels occasionally anchor here within the five fathoms or kelp line, but are always prepared to warp out. This is a kind of inner bar. The kelp doubtless prevents much surf, and renders it more convenient to vessels discharging; but the kelp during heavy gales is generally washed up.

Having been requested to afford surgical assistance to a young man of one of the first families, who had fractured a limb, and was unable to be moved from Buenaventura, the Starling was despatched for that purpose, as well as to obtain its position, the ship standing close along the coast towards the bay of San Pedro. A short distance to the southward of Buenaventura the coast spits out in a low sandy point, off which the water shoals suddenly to seven fathoms. There is no danger if the lead be kept going. We noticed a lagoon over the sands.

On the evening of the 11th of October, on opening the bay of San Pedro, we noticed several lights, which, by the aid of the night glasses, were discovered to belong to vessels at anchor. This relieved us much; for having suddenly shoaled from fifteen to five fathoms rocky, we had tacked off shore. In a short time, we anchored amongst the vessels in seven fathoms, when the masters of two American

ships immediately came on board to offer their services, and the following morning those also of two brigs.

The bay of San Pedro, which is situated in latitude 33° 43′ N., longitude 118° 14′ W., is open to the south-west, but tolerably sheltered from the north-west. Inside of the small island in the bay is a very snug creek, but only accessible to small craft, by reason of a rocky bar, having only at low-water springs five feet.

The only house near the bay is supplied with water from some miles inland; and I am informed that at times the inhabitants are in great distress. It is only maintained for the convenience of trading with the vessels which touch here for the purchase of hides and tallow. Two of these vessels, under American colours, we visited, and found them fitted up transversely abaft the mainmast as shops, containing mostly hardware and linen drapery, which are much sought after by the farmers, who take them in part payment of their hides and tallow. We found some of their goods very useful to us, after so long an absence from cutlery shops.

The cliffs of the western sides of the bay, which form the beach line, are very steep, about fifty feet perpendicular, descending from an elevated range, about five hundred feet above the sea. They are composed of a loose mud, mixed with lumps of a chalky substance, enclosing organic remains, sometimes running into chert or chalcedony.

It apparently results from volcanic action, and the frequent shocks of earthquakes have left the ground traversed by deep fissures. This chalky or pipeclay substance also occurs at Santa Barbara.

Having completed this bay, we moved to the bay of San Juan, despatching the Starling, assisted by a cutter and mate, to examine the island and anchorage of Santa Catalina; rejoining us at San Diego.

On the evening of the 13th October, we dropped anchor in the bay of San Juan. Owing to the surf running at the time, and my objects rendering me, without any assistant, a perfect slave to duty, I was compelled to stick to a half tide rock, to effect the security of this position. The bay, or rather the outer rock, on which I observed, is situated in latitude 33° 27′ N., longitude 117° 41′ W. It has a high cliffy head to the north-west, but terminates in low sandy beaches to the southward. This bay was examined and surveyed. The anchorage is foul under five fathoms, is unprotected, and the landing bad.

The mission is situated in a fruitful-looking sheltered valley, said to abound in garden luxuries, country wines, and very pretty damsels, whence the favourite appellation Juanitas. I suppose, therefore, that they all assume this name. As many call here, apparently, to my view, at risk of anchor and cable, I was induced to ask the master of a vessel, who called upon me, what brought him here. "It is only visited for stock, fruit, or vegetables," was his dry reply.

At four we quitted San Juan, but owing to light winds, did not reach San Diego until the 17th of October, having anchored within the kelp the night previous. The kelp at this port is rather a nuisance to vessels drawing less than twenty to twenty-four feet, as it leads you at least two miles out of your way, to clear its tongue, having nothing under three fathoms over its whole bank. To those accustomed to the ground it is well, but to us lead-going gentry, who are compelled to stick rigidly to the laws we lay down, it would have been quite *en regle* to round this kelp, even by going ten miles further out of our line. It is *very* doubtful if the Sulphur would have done so if any breeze had helped her.

The position on which our observations were made is the eastern spit of entrance, which was found to be in latitude 32° 41′ N., longitude 117° 11′ W.

The port of San Diego, *for shelter*, deserves all the commendation that previous navigators have bestowed on it; and with good ground-tackle a vessel may be perfectly land-locked. The holding ground is stubborn, but in heavy southerly gales I am informed that anchors "come home," owing to the immense volume of kelp driven into the harbour. It has been stated to me by an old sailor in this region, that he has seen the whole bank of fucus giganteus (which comprises a tongue of three miles in length by a quarter broad) forced by a southerly gale into this port. This, coming across the bows,

either causes the cable to part, or brings the anchor home. No vessel, however, has suffered from this cause. The chief drawback is the want of fresh water, which even at the presidio, three miles from the port, is very indifferent. This is strange, for I am perfectly satisfied that if proper precautions were observed in digging wells, the height of the peninsula must furnish water. This, however, to be maintained sweet must be constantly worked, and occasionally as dry as it can be reduced.

The mission is situated up a valley, about seven miles from the presidio. There they have, not only the finest water, but a river or torrent flows from thence to the presidio during the rains, but in the dry season loses itself in the sand about half way. The soil is very loose, chiefly of volcanic sand and mud, mixed with fine pumice and scoriæ, which on the flats between the elevated ridges, where the rain has carried off the lighter particles, presents the appearance of finely-gravelled terraces. Several varieties of cacti, particularly of the Turk's head variety, were abominably abundant, very much to the discomfiture of our ascending parties in the prosecution of the survey.

Since the missions have been taken from the padres, and placed under the administradores, they have fallen entirely into decay and ruin; and it is not improbable that the whole country will ere long either fall back into the hands of the Indians, or find other rulers. During our visit they were very

apprehensive of an attack, and had been one night at quarters, their arms (in the nineteenth century!) consisting of bows and arrows, inasmuch as they had no powder for any firearms they might have possessed. The garden, also famed in former days for its excellence, has now fallen entirely into decay, and instead of *thousands* of cattle, and horses to take care of them, not twenty four-footed animals remain!

The trade of the port consists entirely of hides and tallow; but not, as formerly, from the missions; for they have long been fleeced. It has now become a complete speculation. It is necessary that one of the parties should reside on the spot, probably marrying into some influential family, (i. e. in hides and tallow,) to insure a constant supply for the vessels when they arrive. It is dangerous for them to quit their post, as some more enterprising character might offer higher prices and carry off their cargo.

But little wine is made since the virtual death of this mission, and that little of very inferior quality. I believe that at the neighbouring mission of San Luis Rey the principal wines are made, as well as a very pure spirit resembling Italia, whisky, or the pisco of Peru.

We found tolerable sport between daylight and the breakfast hour, in killing rabbits, hares, ducks, and cordoneces, (quail of California). The seine afforded also a plentiful supply of excellent fish.

Having remained here five days, in order to rate the chronometers, a tolerable survey was made of the port.

On the afternoon of the 22nd, we quitted San Diego, intending to land and fix the position of Cape Colnett; but about eight in the evening of the 23rd, having rounded the Cape, we found such a heavy swell rolling in, that landing was impracticable. Cape Colnett was however fixed by the Starling on the day following, by the sea horizon, when she also found the rollers too heavy.

Our course was now directed for Port San Quentin, off which we anchored on the morning of the 24th, in four fathoms. I landed immediately to secure the position, and the boats were despatched to discover the channel. About three P. M., however, the water at the ship had fallen so much as to render her immediate removal necessary. We accordingly weighed, and having made a tack to the westward, found the water decrease; tacked, grounding in stays, and after a series of gambols of this nature, which did not prevent her *staying*, succeeded in entering the port, where we finally anchored in a snug berth, in seven fathoms. No damage beyond a slight shock to the chronometers.

As this port is but little known, it became of still more importance that it should be strictly examined. Not that it affords anything equal to San Diego; but it is more secure when within, and might afford fresh water.

The sandy point on the left side of entrance is situated in latitude 30° 22′ N., longitude 115° 56′ 33″ W., Var. 12° 6′ E.

The whole coast is dreary, being either sand hills or volcanic mountains, five of which, very remarkably placed, caused one of the early navigators to term it the Bay of Five Hills. It is the Bay of the Virgins of former, and Port San Quentin of the later Spanish surveyors. As it appears engraved under the latter, on an extensive scale, (which misled us, and caused our touching,) I have preferred that name for it.

The island and paps of Las Virgines, are situated to seaward, about two miles from what has been termed Observatory Peak in our plan.

We found little to interest us here in the way of natural history. Ducks, curlew, and a few cordoneces, were all that were noticed. A very neat specimen of rattlesnake, about three feet in length, with nine rattles, was taken alive and preserved. I do not recollect that any new plants were noticed.

Our examination of San Quentin being completed, we moved on for St. Bartholomew (or Turtle Bay) and the great bay or gulf of Magdalena, despatching the Starling to make the examination of the island of Cerros and neighbouring spots, with directions to rejoin at Magdalena.

On the 28th we passed the islands of Cerros and Natividad, and on the morning following anchored

in the bay of San Bartholomew, called also Turtle Bay by the whalers. As my principal object was the position, I could only effect the examination of our immediate anchorage; but the sheltered position where the whalers resort to cooper, is within a range of reefs, which divide the bay, from seaward inwardly, into two parts.

The surrounding land is high and mountainous, composed, as far as we had opportunity of examining, of every rock occurring in trap formations, but reduced to fragments, not exceeding four or five pounds in weight. Marine shells, similar to those found on the shores of the bay, were plentifully mixed up with this general debris, and in the layers between some clay beds, crystallized gypsum abounded.

The bay is formed by a high range of loose cliffs on the north, and fine gravelly bay on the east, and a coarse sandy tongue connects a high peninsula or island at high water in its centre, (forming a third southern bay.) From this peninsula rocks extend northerly, partly under water, jutting into the heart of the bay, and forming a safe land-locked position, having five fathoms within.

The place of observation on the northern head of the bay is situated in latitude 27° 40′ N., longitude 114° 51′ 20″ W., variation 10° 46′ E.

The anchorage we took up was in seven fathoms, sheltered from all but S.W. winds, but bad holding ground.

At four we quitted for Magdalena, where we anchored on the morning of the 31st. I was fully prepared to have found, as the name imported, an extensive bay; but on entering the heads, which are about two miles asunder, no land could be discerned from the deck, from north-west to north-east or east; and even after entering, it was quite a problem in this new sea where to seek for anchorage, our depths at first, even near the shore, ranging from seventeen to thirty fathoms. However, as the prevailing winds appeared to be westerly, I determined on beating to windward, in which it eventually proved I was correct. About four P. M. we reached a very convenient berth in ten fathoms, with a very sheltered position for our observatory. Preparations were immediately made for the examination of this extensive sea, or what I shall in future term the Gulf of Magdalena.

It is probable that this part of the coast formerly presented three detached islands; viz. St. Lazarus range, Magdalena range, and Margarita range, with one unnamed sand island, and numerous sand islets. It is not improbable that its estuaries meet those from La Paz, forming this portion of southern California into an immense archipelago.

Here we hoisted out the Victoria, and equipped her for sea service, placing her under the command of Mr. Richards, midshipman.

The first part of our expedition led us up the northern branch of what held out some prospect of

a fresh water river, particularly as frequent marks of cattle were noticed. In the prosecution of this part of our survey we noticed that the St. Lazarus range is only connected by a very narrow belt of sand between the two bays, and that the summits of some of these sandhills were covered, in a most extraordinary manner, by piles of fragile shells, which resembled those found recent in the gulf. At elevations of fifty and sixty feet, these minute and fragile shells were found *perfect;* but on the beaches, either seaward or within, not a shell was visible. This is the more extraordinary, as these sand wastes are constantly in motion, and drowning everything else, and yet these shells are always exposed! On digging beneath them to erect marks, no beds of shell occurred, nothing but plain sand. It was further remarkable that they appeared to be collected in families, principally arca, venus, cardium, and murex. When ostrea appeared, they were by themselves.

The cliffs throughout the gulf abound in organic remains, and I cannot but believe that the same cause has produced the above unaccountable phenomena which I witnessed throughout a range of at least thirty miles.

Having explored the westernmost estuary, about seventeen miles north of our observatory, until no end appeared to its intricacies, I resolved on attempting a second, which afforded a wider entrance, and offered deeper water. This was examined about four miles beyond the last, and it still offered ample

scope for employment, the advance boat being at that moment in four fathoms, and distant heads in view; but considering that sufficient had been done to show that no hope offered of reaching fresh water, and the still unexplored extent of the gulf would engross all our spare time, I determined on adhering to its main outlines, which eventually offered so many intricacies as almost to baffle our patience.

One circumstance connected with the examination of the second estuary afforded very strong proof that no fresh-water streams were in the vicinity. It was the fact of finding near our advanced position many large specimens of the Asteria Medusa, or Euryale, an Asteria seldom found but in pure, and generally deep salt water. At least twenty were taken by the dredge.

By the 9th of November we had reached the eastern end of the first gulf, when the ship was moved into the second, the channel or strait connecting them being not more than a quarter of a mile wide. I had been very sanguine in my expectations that we should have discovered a safe channel out by the eastern end of the island of Margarita; but until satisfied upon that point I took the Starling and boats to explore. I found that our boats, and, upon emergency, the Starling, might have passed out, but it was far too doubtful and intricate for the ship.

During the time the boats were thus engaged, I overlooked them from the summit of one of the

highest peaks of Margarita, and plainly saw the outlines of the shoals, and difficulty of the navigation, even for boats. I had also a fine view of the southern unnamed island, which terminated in a crescent about ten miles to the S. E. with a passage very similar to that immediately beneath.

We had frequently seen indistinctly the outlines of very high mountains to the eastward, distant about fifty or sixty miles. But on this day I could detect abrupt breaks, which indicated water-courses between them, and could plainly follow out the yellow breaks of cliffs, as far as the eye could trace inland.

I have not the slightest doubt that these estuaries flow past them, and probably to the very base of the most distant mountains, even into the Gulf of California. As I am informed that there are no fresh streams in the district of La Paz, and that similar esteros run westerly from that neighbourhood, it is not improbable that they meet. Although the solution of this question may not be commercially important, it is one highly interesting in a geographical point of view.

On the 18th of November, having been eighteen days engaged on this survey, we quitted the Gulf of Magdalena, shaping our course for Cape San Lucas.

After all the time expended, independent of severe labour, on this immense sheet of water, it will naturally be inquired, What advantages does the

port offer? The reply is: at the present moment shelter; and from several watercourses nearly dry at the time of our visit, it is evident that very powerful streams scour the valleys in the winter season, which in this region is reckoned between May and October.

Fuel can be easily obtained in the esteros, (mangrove.)

As a port for refit after any disaster, it is also very convenient; and for this purpose, either our northern or southern observatory bays may be selected. The latter would afford better shelter, but the former is certainly more convenient, and less liable to difficulty of navigation, the access to it being entirely free from shoals.

In war it would be a most eligible rendezvous, particularly if watching the coasts of Mexico or California, as no one could prevent the formation of an establishment, without adequate naval force; and the nature of the country itself would not maintain an opposing party.

The island of Margarita would afford an excellent site for a deposit for naval stores. Martello towers on the heads of entrance would completely command it, and, excepting on the inside, no force could be landed.

Water would doubtless flow into wells, of which we had proof in spots where the wild beasts had scraped holes; but from some (no doubt removable) causes, it was intensely bitter. There is nothing in

the geological constitution of the hills to render it so.

The ranges of hills composing the three suites of mountains vary from fifteen hundred to two thousand feet, and are composed principally of fragments of hornblende slate, serpentine, sandstone, and primitive limestone. The cliffs at the water side are generally mixtures of the above, containing balls of actynolite, serpentine, tremolite, asbestus, amiantus, and in many places extensive *interlying* beds of organic remains, similar to those occurring recent in the gulf. At one spot in particular, from whence I obtained specimens, the bed was wedge-shaped, running inwards about twenty or thirty feet, and about three feet in thickness at its *then* outer face. A large portion of the cliffs had fallen and been washed away. This was about a mile inland. The substance above and below was chiefly actynolite and serpentine.

In the vegetable kingdom our botanical collectors were not idle. The following is from Mr. Barclay's report:—

"The plants of this place are of humble growth. If we except the mangrove trees growing upon the banks of the esteros, rhamnus olefolia, and rhamnus cuneatis, together with a soft deciduous tree on the island of Margarita, there will be nothing left deserving the name of 'tree.' The two species of rhamnus produce a solid reddish-coloured wood, which would at least make good fuel. On the banks

of the esteros I found stachys coccinea, nemophylla paniculata, and a species of datura in flower, together with a scrophularineous herbaceous creeper, covered with its pretty flowers, and producing a singularly formed seed-vessel.

The hills are covered with shrubs, amongst which I found Linaria latifolia, dendromecon douglasii, a species of mimosa with scarlet flowers, several curious forms of euphorbiaceous plants, gillia squarrosa, croton pulchella, and asclepias tenella. The cactus family are here very numerous, as well as rich in variety. The species most deserving of notice is, the large cylindrical cactus, which is from twenty-five to thirty inches in height, and from twenty-four to twenty-six in diameter. Mammillaria nobilis often attains a height above thirty inches, which is an unusual circumstance connected with the growth of this species.

Another singular form of this tribe, with flat compressed spines, came under my notice. The plant creeps along the surface of the ground, and produces a flower about six inches in length, the petals of which are white, with a pink stripe down the centre, which produces a fine effect.

Of birds but few were noticed. Up the estero I noticed hares and the cordoneces; but, from my very limited visit, I had not time to follow them.

The cuyotes, or dog-jackall, were numerous about the tents, which they visited after nightfall, but were

valorously repelled by one of our dogs, a mixture of Nootka and Pointer.

In conchology, size made up for deficiency in number, the cardium measuring about six or seven inches.

On the 20th November we reached Cape San Lucas, and succeeded in establishing its position, the ship anchoring about two, in thirteen fathoms sand. They were nearly making a sad mistake after shortening sail, by finding, after the cast ten, that they had no bottom with eighty-eight fathoms, just as they were about to let go the anchor. This shows the necessity of keeping the lead on the bottom, before letting go an anchor. I recollect a corvette losing an anchor and cables, at Teneriffe, by a similar neglect.

After taking in a supply of wood, water, and ten bullocks, surveying the bay, examining the country, and completing our astronomical and magnetic observations, (during twenty-six hours,) we quitted this bay for San Blas, where our stores and provisions were to await our arrival.

The bay of San Lucas offers safe anchorage, and shelter from westerly winds, but is exposed to a very heavy and most dangerous sea from the S. W. The soundings are very irregular, and the anchorage, by reason of its great depth in the centre, is completely on a lee-shore.

At the village, consisting of four houses, inhabited by two Americans and some Californians, water, wood, cattle, cheese, oranges, and pumpkins, were

obtained. The water, which is procured from wells, is sweet when drawn, and very bright, but is impregnated with muriate of soda and nitre, which pervade the soil. It consequently soon putrifies on board. Cattle are fine, varying in price from five to eight dollars, and ships of war calling or passing *en route* for San Blas or Mazatlan, will do well to take their bullocks here, as the Mexican beef is very inferior, and does not afford as much nourishment even as the salt provision now supplied to her Majesty's service. Wood is about the same price as at San Blas. The cheese is good, at times excellent, and may be procured at any age; it is the refuse of this market, and at treble price of that which is met with at Mazatlan or San Blas.

The country about Cape San Lucas is mountainous, and probably granitic; as that found in the peaks in our neighbourhood, which we ascended, as well as that on the sea border, was a close-grained granite, very much disturbed or upheaved, and in immense blocks.

The plains, as well as the hills, are very abundant in cacti, fourteen species of which were found in one spot. Mr. Barclay remarks, "a handsome species of loranthus here grows upon the cylindrical cactus, ænothera spectabilis, and a species of gossypium, the bark of which is used for making thread. The vegetation differs but little in generic productions from Magdalena, a circumstance which enabled me to procure ripe seeds of several plants,

which I only obtained in flower previous to our arrival at this place."

The navigator has no hidden dangers to fear; all are above water. After rounding the Frayles from the westward, he may safely stand for the houses, dropping his anchor in fifteen fathoms. The bad season is supposed to commence in June, and terminate on the 1st of November.

About four P. M., on the 24th, we reached San Blas. The sun was obscured, and there were evident signs of the rainy season not having entirely ceased; the people looking cadaverous and inanimate. Having received my despatches, and learned that a transport was waiting at Mazatlan with stores and provisions, we weighed at dawn, and, favoured by a fresh S. E. breeze, reached that port in twenty hours; rather an uncommon passage.

Unfortunately we found the rains still falling, and that our stores and provisions had been warehoused in the Custom-house stores, thus giving us the additional trouble and expense of re-embarkation. No time was lost in effecting this, the delay affording me time to test our magnetic instruments previous to our homeward and long cruise.

The contents of my instructions authorising my return by the western route, viâ Tahiti, and other points highly interesting in a magnetic point of view, it became important that a strict scrutiny should take place before my departure, under as great variety of temperature and exposure as I could

obtain *naturally;* having found artificial increase of temperature involved hygrometric affections, probably more detrimental to the results obtained than any customary atmospheric variations. As I intended paying a visit to my friend Mr. Barron, at Tepic, I should there have an opportunity of a considerably lower temperature than I could otherwise obtain, and the observations would be further interesting from their height of three thousand feet above the sea level. Our chain of meridian distances from the Columbia, and ports interjacent up to San Blas and this point, were satisfactorily connected.

The quantity of stores embarked amounting to more than twelve months for one hundred and thirty-six men, for the two vessels, independent of our remaining stock, it became necessary to stow the lower deck to the beams, and berth our crew on the maindeck.

On the 4th December, we quitted Mazatlan, having experienced great attention from the resident merchants. The conduct of Messrs. Kayser, Hayn, and Co., in having charged themselves with the entire transhipping our stores, &c., and making the necessary arrangements with the officers of the Custom-house, and refusing commission for the enormous trouble, is beyond all praise, and I sincerely trust that the government have repaid them by more than words.

The conduct of the Custom-house authorities also was very similar to that of Guayaquil; the

directed that no charges whatever should be levied; and it is but due also to the administrador to state, that he took upon himself the responsibility of acting up to the spirit of this order before its arrival.

Mazatlan, since our visit in 1827, has increased from a village to a town, and, of course, has also its increase of bad characters. It is dangerous to be out at night, unarmed or alone.

The only notices I have from Mr. Barclay are: "The ficus tribe are amongst the leading features of the forest. Ficus obtusifolia, when wounded, yields a yellowish fluid of an adhesive nature, which the natives apply, in the form of a plaster, to broken limbs, (quebro duro.) The fruit of cathartocarpus fistuloides is used as a purgative; and a shrubby species of verbena, abundant on the hills, is considered a sovereign remedy for asthma."

We were again fortunate in our breeze, having returned to San Blas in twenty-four hours. Quitting the ship, accompanied by Lieut. Kellett, and our surgeon Mr. Hinds, we reached Tepic the following morning, having slept at the half-way house of Dona Manuela, of Navarete. The traces of the rains were yet fresh, and the roads considerably worse than at my last visit in 1837. Tepic, too, seemed to be rapidly declining; the wealth of former days, as well as the lively youthful faces, were fast waning. It was a melancholy feeling to recall the year 1828.

My kind friend Mr. Barron received us with all

the warmth for which he is famed, and nothing was omitted to do honour to our visit. Since my last visit Mr. Forbes, aided by Baron, Forbes, Junr. and Co., has constructed a cotton factory, superintended by Americans, which returns them at present more than ten per cent. A theatre has been built, very magnificent for this country, and the performances are far beyond anything one could expect. The people have also commenced laying out the suburbs in paseos, gardens, &c., and it is to be hoped that this place will in a few years, when events which have thrown a gloom over all have been forgotten, once more emerge from its present lethargy.

During our visit the temperature ranged from 56° to 76°, which answered all my expectations for magnetic purposes. The city and suburbs of Tepic are situated on a flat, formed by a shower of volcanic tufa, resembling half burned pipe-clay, and generally termed by the residents "pumice." "Pumice" is porous, fibrous, &c.; but this substance, in addition to my preceding remarks on it, at times proceeds to vitreous masses like porcelain. Wherever the rocks protrude, they appear to be generally a bluish close-grained basalt, free from crystals of olivine, and plentifully studded with minute crystals of feldspar.

The last mails from England having merely brought me copies of former letters, I inferred that it was expected I would not lose time in these regions, and therefore, taking leave of our kind friends, we returned to San Blas, and having completed the rating of our chronometers, prepared for sea.

I found the ship too deep to be agreeable, having immersed her copper; and having previously obtained the permission of the Admiralty, I disposed of the Victoria to Mr. Forbes, for £100. This was one of the two vessels constructed in 1830, under my superintendence, for the African survey; and the same which, under my present first Lieutenant (Monypenny,) in 1833, by mistaking my orders, made her passage from Gibraltar to England. Having done her duty well during ten years, connected with several of our establishments, we parted with her with mixed feelings; one of satisfaction—that of being relieved from her weight; but the other of regret, arising from the loss of an old aid and pet, and the certainty that she never could be kept as she had been under the pendant.

CHAPTER XVII.

Quit San Blas — Island of Socorro — Goats — Does not afford water — Braithwaite's Bay — Clarion Island — Lose anchor — Botany — Fish — No water — Irish eagle shot — False alarm of breakers — Make the Marquesas — Enter port Anna Maria — Nuhuhiva — Transactions — War in Tabu — Interference to stop hostilities — Unsuccessful — Compact of safety to foreign residents — Signed by king and prime ministers — Quit Nuhuhiva.

CHAPTER XVII.

On the evening of the 21st Dec., we quitted San Blas "homeward bound," but on a long but deeply interesting cruise, in the novelty and delight of which all seemed to be deeply interested. With light airs from S. E., we cleared Tres Marias, shaping our course for the almost unknown islands of Socorro and Clarion, now, I trusted, to be definitively placed. In this we were entitled to be confident, should we be fortunate enough to obtain a landing, having sufficient proof of the value of our present force of chronometers.

We ran over the position of San Benedict without noticing anything like land, and on the 25th December hauled to the south for Socorro. About four P.M., having ascertained our position by evening sights, and that the island ought to be visible, I went on deck to examine the horizon, and fortunately discovered its summit on our *beam*. But for this accident, we should possibly have been

another day seeking for it. Before dark we had the command of position for its examination the next morning, when we ran down for its southern side. The island is lofty, making in several peaks, the highest probably two thousand feet above the sea. The eastern coast is very dreary and forbidding.

About nine we anchored in a small bay, where we effected a landing and secured our object, besides making a plan of what I suppose to be Braithwaite's Bay, of the charts, and in this presumption have assigned that name to it. Landing rocky; shores of lava coulé, and nothing like a beach. Neither wood nor water visible, although, from the constant clouds which hang over the high peaks, there must be a supply in some other point.

Lieut. Wood was despatched to examine the western bay for wood or water. His report (not having landed) was, " that goats were observed, the bay spacious, but no indications of wood or water visible." It is probable that the goats find water.

I found this island to be placed fifty-two miles further to the west than laid down in the charts; but its latitude, correct. It was difficult to penetrate into the interior, even for a few hundred feet, owing to the prevalence of the cactus opuntia; all who attempted to do so suffered for their curiosity.

One of my boat's crew made himself ill by eating a large bean, which grew abundantly; but as I partook of them cooked without injury, I suspect him

to have indulged too freely. I recollect an instance of a boy gorging himself with the seeds of the palma christi, and swelling to such a degree, that his life nearly paid the forfeit; yet the instant he was out of his bed, he was caught with his pockets full, and had eaten about a handful. His excuse was, "Why I ate a *pint* before I was taken ill." I suppose my youth had followed his example. "Every evil has its use." "Tanner's beans" became a short warning, whenever any one was seen tasting unknown fruits.

On quitting Socorro, the Starling was despatched to search for some other islands supposed to exist to the north-east of Clarion, and rejoin at that rendezvous. We had crossed over part of the same track in 1837 without success.

On the evening of the 28th we made Clarion Island ahead, and by sunset were off a large bay on the south side, where, by the leadsman, we ought to have found sandy bottom in fifteen fathoms. We anchored, but owing to a sudden swell setting in from S. W., determined on standing off and on during the night. In attempting to weigh, we parted our cable, and lost our pet anchor, which held generally better than a bower, and was only fifteen hundred weight.

On the following morning I landed on a point of rock, which ran out from a peninsula, and secured a good position on the main island for obtaining my

observations, the result of which gives this island ten miles to the eastward of its assigned position, and a little to the southward.

It differs slightly in its features from Socorro, excepting that a whitish coloured fresh-water lake was found at the beach, and birds were more numerous; viz., gannet, frigate pelican, several varieties of boobies, of tern, ducks, and doves. The plants were more luxuriant, our friend the cactus particularly so, but not so uncourteous as at Socorro; it did not entirely stop the way. No streams were noticed.

Fish were very numerous, and took the bait freely; but they broke the hooks. Turtle plentiful; two captured. Mr. Barclay notices, "Argyreia rosea, and a species of ruta, run along the sand, the former extending to upwards of twenty-five feet in length. Cassia pendula, Guilandina bonducella, and a species of tetranthera, are among the plants which I found upon the higher ground. Convolvulus purpurea, and two species of phaseolus, are abundant in the ravines; and a species of euphorbia, like the species heterophylla, and prickly pears, cover the ground in many places, and form a kind of stage for the leguminous plants to run upon."

The Starling was unsuccessful in her search for the islands, and as the tracks of both vessels in 1837 were by day, there can be little doubt that Clarion has been multiplied.

We were not fortunate enough to find wood or

wholesome water in any way to justify a vessel seeking for those necessaries at these islands. Possibly distress might be relieved, but nothing beyond.

Our course from Clarion was S. E., in order to make sure of any island said to exist in that direction; and having run twenty-six miles before dark, it was useless to deviate longer from our course; we therefore bore away S. W. by S., for the Marquesas.

For the first few days we experienced a long heavy swell from the N. W., with the wind fresh at N. E.; and we generally noticed birds. On reaching the parallel 12° N., we first experienced rain, which rendered the sea smooth, but brought variable winds and heavy showers. For three days these were very troublesome, and continued so until reaching the fifth degree of north latitude, when the rain dwindled into showers. During this entire route, the gannet, frigate pelican, tropic birds, and booby, were constantly noticed. It follows that they are not decisive proofs of the vicinity of land.

Rains still heavy in the squalls. This morning, 9th January, we observed a hawk or fish-eagle flying about the ship. It was shot, but fell overboard, and we were going too fast to pick it up. During the night a calf, which was born on board, leaped through one of the ports, and was lost before a boat could be lowered: as it was not a *man*, she was not brought to in time.

The old N.W. swell increased far beyond anything I have before noticed in the Pacific. The wind at the same time hauling to the southward, backed us off to W. S.W., and in one of the rain squalls threw us so much on our lee, that we shipped much water through our maindeck and cabin ports.

In this squall we observed the sunbeams on the horizon, through the surrounding rains, shining on the crests of the swell resembling very heavy rollers, and although I instantly perceived the cause and named it, yet having rivetted my attention for some time, I could hardly bring myself to believe they were not heavy rollers,—probably from hearing those around me confident that they were so. Upon similar grounds, doubtless, many of the reefs and islands in these seas have been reported.

On the 14th, we crossed the equator in longitude 129° W., *no birds*, weather fine, air 75° 5, sea 76°. Sent the water-bottle down, and obtained the temperature from one to six hundred fathoms.

On the 15th, the breeze hauled more to the eastward, enabling us to *steer* more westerly, which the former variables prevented. At one time I even doubted our reaching the Marquesas.

On the 16th, in 5° S., we again tried the temperatures to six hundred fathoms.

On the 20th, we made the island of Rooheoah, or Riou's Island, ahead, and passed on its eastern side, with a fine fresh N.E. breeze.

This island has many remarkable conical rocks,

and its outline, generally, is much broken; particularly towards its western extremity, where a cluster of islands and rocks form the only bay where any probability of landing seemed to offer. I am informed that this bay has no beach, but that the landing at the rocks is smooth.

At ten we saw the island of Nuhuhivah through the haze. As seen from the eastward, it presents a long low point on its north-eastern limit, and high abrupt heads; to the southward, that of St. Martin's, which forms the eastern head of Comptroller's Bay, being very abrupt, and capped with masses of rock like ruined castles. I was much disappointed in the height of the mountains, which I had been led to expect were very lofty, and mention is even made of a cascade three thousand feet in leap.

The object of my visit requiring shelter for the ship, decided me on visiting this island in preference to Santa Christina, and our course was, therefore, directed for Anna Maria Bay. On opening Point St. Martin, Comptroller's Bay nearly tempted me to beat in; but as Vancouver's description of that of Anna Maria showed it to be preferable, we stood on, not, however, without anxiety, as no trace of an opening seemed to offer within the western point. Suddenly, however, a sandy beach opened behind an island, which presently discovered a deep and well-sheltered bay, but rather narrow for working. Shortly after, we noticed an European coming off in a whale-boat, who proved to be a pilot.

Port Anna Maria, Nukahiwa, Marquesas

Coming from the eastward, the port may be easily known by a very conspicuous lofty basaltic dyke, which perpendicularly intersects the eastern outer bluff. Vessels intending to enter the bay should keep this bluff about a point on the starboard bow, rounding the island off it *within* a cable's length, when the wind generally leads in. All the eastern shores of the bay are "bold to," and free from danger, and the wind will always lead off.

The view of the entrance of the bay is beautiful, far surpassing anything I have noticed in these seas; and although rugged, isolated masses of rock here and there start up, to add their sombre effect to the otherwise brilliant tints of the landscape, still the luxuriance of the slopes and valleys (and every inch where vegetation can thrive is stubbornly contested) produces a sensation which cannot be justly entrusted to pen or pencil. If one did not associate gentle slopes and levels with our ideas of paradise, I should say this is it. To those whose ardour would lead them to inaccessible green spots, where some goddess may dwell, here they may indulge; although, unless endued with the facility of moving through the air, their ecstasy might ooze out before reaching these tempting spots.

After a very stubborn beat, we reached our anchorage in nine fathoms about dark, when the rain descended in torrents, not even allowing time to furl, and cooling our ecstasies considerably.

Having arranged with the pilot to meet me on

shore the following morning, in order to select a spot for the observatory, where I might be free from the interruption of the natives, I landed at eight, and was not a little surprised at the entire want of curiosity which prevailed. This was soon explained. The king had given out that he expected a British ship of war to aid him in asserting his authority on this island, and particularly to assist him in his immediate attack on the natives of the neighbouring bay of Taioa, situated to the westward, over the nearest ridge or neck. We were, therefore, tabooed from hogs, refreshments, or any intercourse with his followers, until our intentions were explained.

Being out of his jurisdiction, this rather suited my purpose; I therefore erected my tents in the eastern unfrequented bay, and quietly proceeded with my pursuits. The ship at the same time completed water from the town, where it was soon found that the taboo became a dead letter when interest was concerned.

The spot selected for our observatory was precisely that occupied by Commodore Porter in 1814, and latterly by the officers of the French expedition in the Astrolabe and Zelée,—being a clear sandy bay to the eastward of the Pilot's Hill, which separates it from the town.

The instant my observations were secured, I visited the king, and informed him, as well as his high priest, chiefs, &c., that as my visit was purely scientific, I could not enter into his views, which

were decidedly at variance with anything he could expect from any civilized nation; and I particularly impressed on the chiefs and people the utter folly of expecting aid in their brawls from any power. But as I thought that I might possibly be of assistance in moderating, if not entirely quelling, their belligerent ardour, I requested the attendance of himself and chiefs at my tent the following day, where I had also invited to meet them, the resident missionary, Mr. Thompson, who was also very anxious to put an end to the war.

The party having assembled, I proceeded to explain that it was, in the first place, perfectly impossible that the king could have been promised the aid of Great Britain; that neither arms nor ammunition could be afforded by my ship, nor by any vessel which followed, and that Great Britain, as well as every civilized nation, would deprecate their conduct.

On the other hand, I volunteered to go with the king, and his friend Mr. Thompson, in the Starling, to negociate peace with the chiefs of Taioa and their allies, and to use all my weight in obtaining advantageous terms, provided they consented to forego their present warlike intentions;—it being their presumed intention to fight the ensuing day.

I endeavoured also to convince the chiefs of the absurd falsehoods by which the king had blinded them, and to warn them not to commence hostilities until I had communicated with the Taioans; and that if they acted in opposition, and injured any of my

men, they might possibly find me a more important foe than the natives of Taioa Bay.

They had fully set their minds on *a fight;* whether death or not ensued, to them it was unimportant, so long as their powder was expended by musket; *ball* was not important; *noise* was imperative. They were, however, persuaded to bottle up their valour until my departure, which was at least half a battle curtailed.

The king Moana, who is about twenty-two years of age, is the grandson of the chief installed king by Commodore Porter, who waged war on the neighbouring bays, and reduced them to subjection. He states that an attempt was made on his life by the party in Taioa, and that he left the islands in a merchant vessel, and visited, England where some trouble was taken to civilize him. Mr. Thompson, the missionary above alluded to, fell in with him at the Navigator's group, where he was a slave, and brought him to Tahiti, and thence hither, having clothed and taken care of him. In stature he is about five feet eight inches, not well built, sadly wanting in personal courage, is not a good-looking person, and without any one feature to command respect or attachment; and, further, his best friends assert that he is not deficient in ingratitude, and every other bad feeling. Revenge, sulky, moody revenge, alone actuates him in the present war.

I am inclined to believe that such utter depravity as he manifests cannot be inherent. He is

too stupid to be so excited as he appeared to be; and I would rather suspect him to be the tool of the chiefs interested in the plunder and murder of their neighbours.

Finding that my arguments failed in putting an end to the war, I inquired, supposing they succeeded in conquering Taioa; "What do you intend to do with the people?" He replied, "To take half of their people and property, and put as many of my people into that bay, transferring the others hither."

I then warned him, that as France and Great Britain had landed missionaries to dwell amongst them under guarantee of their safety, (Moana having adopted Mr. Thompson as a chief equal to himself,) that both countries would narrowly look into their proceedings, and most scrupulously as regarded their subjects; and that the day had passed when savage brutality had been permitted its scope. If they ever expected to be treated as beings within the pale of rational creatures, that they must conform themselves to the laws of nations. At the same time, I took care to point out the recent cases of interference, both at Sandwich Islands and Tahiti, of which Moana was perfectly aware.

As the weather had not favoured my observations, I despatched the Starling, with Mr. Thompson and the pilot, to Taioa Bay, to try what power they might have in terminating difficulties, or ending this foolish war. On their return, Lieut. Kellett

reported that they were averse to war; but, if attacked, would strenuously defend their possessions; "they certainly would not go *out* of their valley to fight. If the king would consent to peace, they would give him the customary feast, and receive him cordially; but would not yield the sovereignty of the bay: the question of a chief (*king* they acknowledged none) ruling more than his own valley, being foreign to their original dispositions." His absence has, indeed, rendered him in their eyes defunct.

This communication did not alter the plans of the chiefs. I desisted from further conference; the king, however, frequenting my tent with less reserve, unattended, and sending trifling presents.

In order to obtain hogs for the crew, curiosities, &c., as well as to ascertain the nature of the bay, and the disposition of its nature, I made a party to visit Tacapa, one of the bays within Comptroller's Bay. Taking with me Lieut. Kellett, the surgeon, and pilot, we proceeded in one of the cutters, and reached the bay about half-past ten.

Comptroller's Bay is an extensive arm, running in above five miles from St. Martin's Point, and contains three distinct bays, that to the eastward, inhabited by the distinct race of Typees, being completely divided by a peninsular tongue. They are at war with those of Tacapa and Acapa, the next western bay, and are described by our pilot as a more warlike people. On one occasion they cap-

tured the master and mate of a vessel, which anchored there by mistake, and did not surrender them without heavy ransom. They have at times ventured in their war canoes to punish their enemies to the westward. In the present war they are opposed to Moana.

Our visit to Tacapa merely assured us of the intention of this and the Acapas to espouse Moana's marauding expedition. But few articles were obtained from them; muskets and powder being the general demand for hogs, or war-clubs. We returned about sunset. The most remarkable feature in the people of this bay, was the prevalence of disease. Hardly an individual was free from some disgusting disease or deformity.

As we failed in our endeavours to obtain hogs, the pilot pressed the purchase of a bull, cow, and heifer, which would otherwise be sacrificed at the war feast, and therefore prove a total loss to him. I consented, but would willingly have paid their value to have ensured their lives after my departure. As I found this could not be guaranteed, they were embarked for the use of her Majesty's subjects, instead of these half (if not entire) cannibals.

Daily threats having been made by the king and chiefs to destroy Lovell, (the pilot,) the moment we departed, asserting that by his instrumentality I had refused them assistance, and these threats assuming a more determined aspect, from a quarrel with another Englishman, (his partner,) whom Lovell,

in self-defence, had cut in the head with a sword, but who had joined the king's party in order to be revenged;—and further, the queen-dowager's party (adverse to the war) having threatened to destroy Mr. Thompson, the missionary and *adopted* friend of Moana, if Lovell, *her adopted*, was touched; —I sent for the king, queen, chiefs, and British subjects in question, (at the same time issuing instructions for the ship to cover the landing party, and the Starling to warp within pistol-shot,) and having explained to them the reports I had heard, demanded from the king and his prime minister a distinct engagement that he would hold himself and chiefs responsible for any acts committed against the persons or property of British subjects resident.

I further assured him, that I should transmit copies of this document to the admiral, and the first ship of war calling at these islands, and that the terms of this contract would be most rigorously enforced. This was duly signed by himself and prime minister.

The scene was not without effect. Seated on the ground on my left, was the sister of the king, a very fine powerful young woman, of about twenty; this being the first occasion of my learning that he had any near relative. On the right sat the queen-dowager, the remains of a very superior woman, and the ally of Commodore Porter. Both were in tears; and although both were diametrically

opposed in politics, their heads were inclined on either knee, looking up most imploringly for protection; the one for her brother, the other for her adopted (Lovell.)

The signature of the document dispelled all fears, and the sun again beamed through their dark tresses.

But their astonishment and alarm were now directed to other objects. They found themselves entirely circumscribed by an armed force, the sea only, with the Starling within half pistol-shot, and ship's broadside, open to them. This was as instantly dispelled by signal, and all again was peace and harmony.

Had hostilities been wantonly commenced, I should have invited the parties in my power to remain on board the Sulphur, until I. placed them upon some other island.

From the disposition of these people, from personal observation, I certainly am much inclined to term them well disposed and easily managed. At the same time I do not think them likely to be driven to consent to any act *commenced under hostility.*

I had a distinct reason for acting in this case with some parade of force. It had been communicated to me that a visit from a foreign vessel of war, on a commission to punish, had been null, and that the natives derided the idea of a ship injuring them.

The facility with which the movement was

effected, and without the slightest trace of ill-feeling, reassured the British residents, and removed from my mind any cause for apprehension after my departure.

The foreign residents assert, and visits to Taioa and Tacapa prove, that the natives of this bay, since the arrival of Moana, are the most troublesome; and but for his re-introduction, peace would have reigned.

Nothing like rudeness or incivility was witnessed by any of us. One or two thefts were asserted to have been committed; but I am inclined to suspect they were exchanged for "value received." That many thefts did not occur surprises me, for they never could have been achieved with less suspicion or less fear of detection—so constantly did I observe things at their mercy.

The group of islands consists of nine in number, viz., Nuhahiva, or Nuuhiva; Uapou; Tahuata, or St. Christina; Mohotani, or San Pedro; Fatuiva, St. Magdalena; Hiraoo, La Dominica; Uahuga, or Uahuna. Vaitahu is one of the bays of Tahuata; Taiohae bay, the people of which Teii; Hakaui Bay, the people of which Tioa. Population of the group is estimated at 15,000. The language of Nuhahiva consists of fourteen letters.

Two Roman Catholic French missionaries reside, to whom the natives go for instruction; but the extent of their conversion is limited to accurately mimicking their teachers: of this we had strong proof at Tacapa. They were in bad health, and

visited by our surgeon. I much doubt of any success to either mission for some time, certainly not until their differences are settled.

Of the productions of Port Anna Maria little can be said. Hogs, poultry, and fruit, may be procured for muskets; water is plentiful, and flows into the sea, where hoses can be conveniently led.

On the 30th Jan. we quitted Nuhahiva, directing our course towards the island of Predpriatie of Kotzebue, in our route to Bow Island, where I had determined to commence our boring operations.

On the 3rd February, at noon, land was reported in the anticipated direction, and as the deviation of a few degrees in our course would retard us but little, I kept away in order to ascertain how the position of this island (referred to Tahiti) would affect the longitudes of that navigator. Nor will it, I trust, be presuming in me, with the instruments entrusted to me, and recent data at Nuhahiva, in assuming that we could set this matter at rest; because, on reference to the work of that officer, I find him using a lunar distance, within a few days, to verify a former longitude. To those who are acquainted with the use of chronometers, and such machines as those embarked in the Sulphur, it is merely necessary to hint that seconds of longitude would be our maximum error.

Having very smooth water, and a breeze nicely adapted to our operations, a rough outline was made, by which we found but slight difference in latitude;

he having taken the centre of the island, I a cocoa-nut tree.

On nearing the island, we perceived the natives flocking to the beach, and observed an apparent opening to the lagoon, at the S.E. angle of the island. The height of the land does not in any place exceed that of general coralline formations, the trees in the clumps appearing to be pandanus, with possibly some of the ficus tribe, which I have seen on some of the Coral Islands. But I have never noticed the bread-fruit, and I believe, from inquiries made, that it is not known in these regions upon coral formations.

It would be waste of time to say more respecting this island than that it is one of the Palliser Group; for whether they be added now, or at the time of the discovery of their first existence, is immaterial. They were all well known amongst the natives of these seas, under the title of the Paumotas; and have long been well known to those resident at Tahiti, who trafficked amongst them years before ships of war were so common in these parts.

Here the opening is on the *weather* side of the island; and as it seems to be a theoretical assertion that the reverse is the general law, I shall call this No. 2—Clipperton being No. 1.

Our attention this morning had been excited by an unusual milkiness of the sea, so much so that I suspected we were in soundings. Experiment settled this in the negative, as deep as two hundred

fathoms. It therefore must be attributed to the mollusca,—which we have remarked (particularly of late) are more abundant in the vicinity of islands, and at some distance from land. This remark may be noticed in our passage across the meridians 130 to 136° W., when searching for reported islands in 1837 and 1838.

A parallel feature to this, noticed by me during nearly thirty years, is that the massive Medusæ, generally termed "Blubber," are seldom noticed out of the influence of large rivers or æstuaries, and abound particularly in discoloured water.

On the 5th of February, at dawn, we discovered Bow Island, and ran along its S.E. side, to the entrance; which we reached about three P.M., and found a very strong ebb, with overfalls running out. I therefore determined on landing for evening sights, and examining the probability of entry before night. Accompanied by Lieut. Kellett, I entered the passage against a four knot current, but by keeping close to the rocks, and tracking the boat along the reef, reached the eastern point of entrance, where about fifteen or twenty natives had assembled to receive us; half in fear, half in joy.

Trusting in some degree to the chance of high-water at noon, and knowing that smooth water at all events would be found at daylight, we lay off and on until the morning, when, with a fine wind abeam, we entered the channel. For a long, and tedious period, with rocks not more than a few feet from her

keel, the ship held her own, but the breeze slackening, and tide increasing, she lost her steerage and touched. This was of little consequence, the tide carrying her out, where I left her in deep water, and landed to secure further observations. The ebb did not slack until three P.M., therefore the assertion respecting noon high-water at the Coral Islands falls to the ground.

At three we entered, and anchored at a position which I had estimated as affording us every advantage. But the anchorage proving unsafe, I shifted to the Blossom's anchorage, which appeared to afford more shelter from the prevailing breezes.

Selecting sandy spots for placing our anchors, we moored the ship, and commenced our refit; landing all our spars, plank, &c., adapted for boring operations, which I had fortunately collected on our northern trip.

The apparatus furnished for this service being similar to that used for boring for water in England, needs but little description; comprising augers of various sizes; iron tubes of three inches internal bore; and twenty-feet bars connected by strong joints with male and female screws. But, as I foresaw, these were not calculated for the service we were about to undertake.

To work these augers, it was necessary to raise a strong scaffold more than twenty feet above our working level; and during the interval employed upon this duty, a party sunk a well of six feet square

and six feet in depth, which was secured from tumbling in by strong piles, plank, and wattling of the cocoa-nut and pandanus leaves.

In the centre of this area a forty-gallon cask was sunk, forming a well, into which one of the lift pumps was introduced. By this arrangement we gained a depth of seven feet, and secured the workmen from annoyance by the loose sand and water, before entering the tools. Fresh water flowed abundantly at five feet; but on the second day, probably from the fermentation of the leaves, it was too offensive to drink.

I have been particular in stating our proceedings, in order to show that more than ordinary attention was paid to this duty. The boring commenced on the second day, under the especial superintendence of an officer, attended by his boring party, and a complete journal was kept of the progress or retardation.

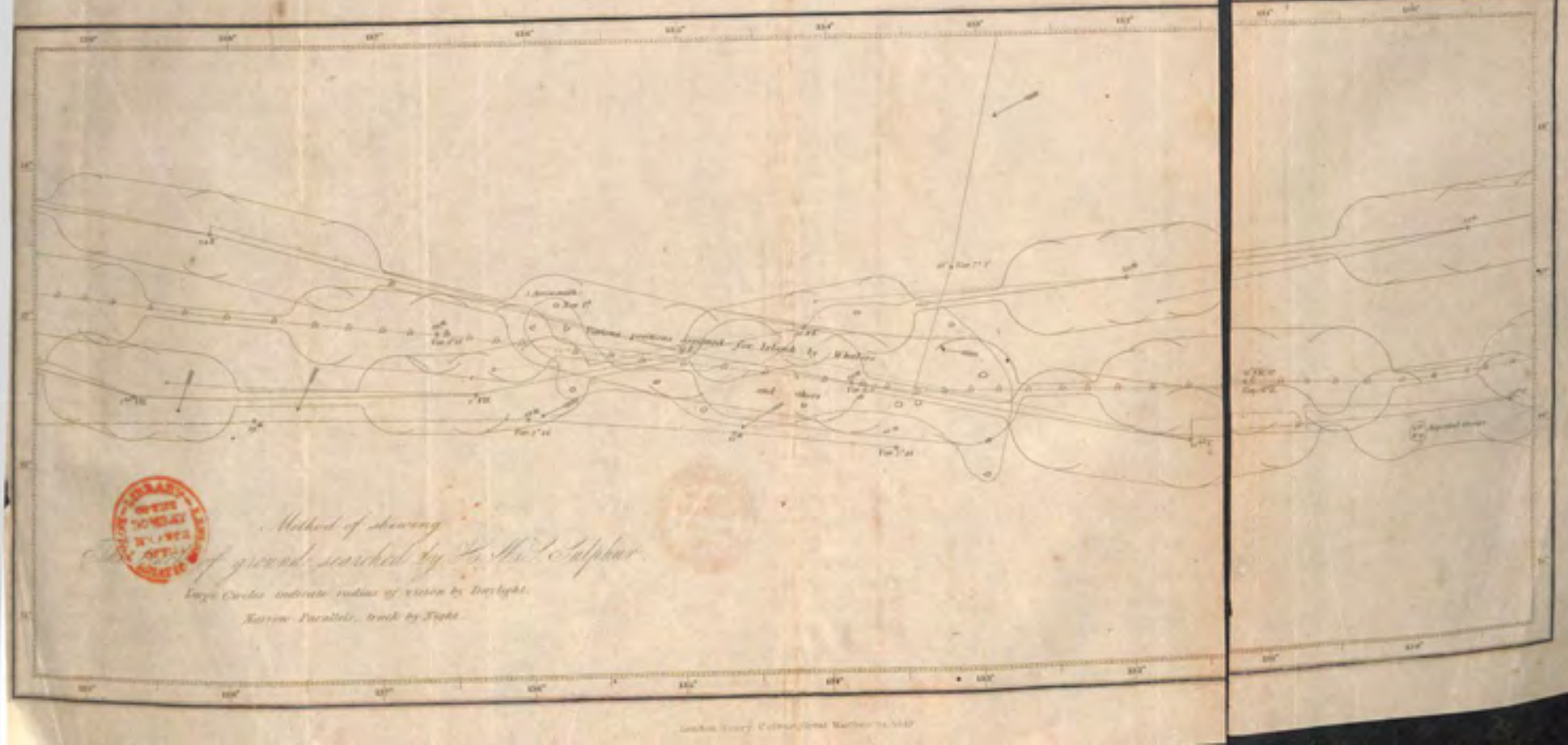
The material through which the auger had to pass was a fine coralline sand, which yielded with difficulty, although very soft. This arose from lateral pressure. A small piece of coral became a great obstruction, and the attempt to crush it lost much time, owing to the yielding nature of the sand.

Recourse was had to the pipes at nearly the commencement of the operations, and all the valved tubes and augers being defective from corrosion, (having been originally stowed in the pump well,) our blacksmith was kept in constant employ, making and altering tools to fit.

By perseverance, and several contrivances, forty-five feet of pipe were entered—when the lateral pressure became too great for the joints, and the solder gave way. Had we been provided with three sets of pipes capable of being passed within each other, I am confident we should have proceeded with rapidity. In fact, either an express borer by profession, with his smithy force, should be sent for such work, or the officer who is to conduct it should satisfy himself, before undertaking such service, as to the tools he requires.

With naval men the word "impossible" only turns up when that expression can be clearly demonstrated; and although I plainly foresaw the difficulties, I yet fancied that we might master them. Wooden tubes five feet in length by two inches internal square, were prepared at the scene of operations, to receive each charge brought up, which was duly inserted, from a graduated plank on which it was previously dried; and recorded in the journal; and a glass tube on a reduced scale, of one inch to the foot, was similarly prepared from the dry mixture.

Frequently, on the withdrawal of the tool, its reinsertion would shew a diminution of two feet, arising from the falling in or caving of the loose matter below; and although merely of the consistence of cream, the tubes could only by difficulty and much humouring be moved down. These disadvantages must, to the eye of any operative, be very apparent; and it must be allowed to those of sanguine tempe-


Method of showing
Part of ground searched by Fr. Mr. Talphar
Large Circles indicate radius of vision by Daylight.
Narrow Parallels, track by Night.

rament to be extremely harassing. But I must say that it did not influence our working party, who continued with the same spirit as if the communication with *home* was to be effected through that aperture.

Against these disadvantages we continued to work until the seventeenth, when, having reached the depth of forty-five feet, the sudden falling in from beneath so effectually locked the tool that no direct moderate force on the levers could move them. Recourse was then had to purchases, in order to save as much of the iron material as possible.

After some very powerful ones had failed, I determined to put the iron to the test, and with a force of fifty men on a purchase computed at twenty tons, parted the bar, which measured one inch square.

Thus, after thirty-five days' labour, ended our operations,—at all events fully coinciding with my prediction that nothing harder than sand could be found below twenty feet. My reason is, that in every operation in which I have personally been engaged, and from the general opinion of those who navigate these coral islands it is clearly understood, and on a small scale been proved, that the corallines are "mushroom featured"—that they can be lifted by the anchor, by hand, and that their bed is soft. If there is any credit due to the history of the Bounty, she steered for, and ran down, the mushroom obstruction of Toobooai; and the Blossom's counter sent one over when warping out at Tahiti. I have other reasons to allege presently.

Another attempt to bore through the coral reef on the outer belt of the island failed, owing to the borer getting jammed at the depth of nine feet. I fully expected to have met sand there also, as the deeper they went the softer it proved, and the water flowed.

The section of the island was taken from the outer surf line, over the spot where the boring was carried on, through the lagoon, to where the ship was moored. A very close survey was taken of every rock above water, and every knoll near the surface; that is, each main rock of the boundary belt of the inner ledge or reef.

A pier of six feet in width, and eighteen inches above the ordinary tides, was carried out on the section line seventy-five feet.

Seventeen cocoa-nut trees were planted at fifteen feet asunder, nearly on the same line, (there are two lines of other cocoa-nuts planted near the tent by some other party preceding us,) and a plate of copper bearing the following inscription, by punched holes, was nailed to the cocoa-nut tree nearest the pipe.

H. B. M. SHIP SULPHUR,
CAPTAIN BELCHER,
BORED THIS ISLAND FORTY-FIVE FEET,
WHEN THE AUGER BROKE.
TUBE S 65° W., 40 FEET.
MARCH 20TH, 1840.

Nothing, I trust, was left undone to enable future

voyagers to test the operations of these important labourers, the lithophytes,

The tide gauge was in operation during this interval, but its register, although conducted to parts of an inch by a newly-constructed tide gauge, will throw no light upon this important question. Observations were continued for days on the outer side, which point out that whatever may be the peculiarity to be hereafter determined at Tahiti, Bow Island does not subscribe to high-water at noon.

On our first arrival the observatory was landed, and as soon as the moon culminated, after day-light, and the boring was in full train, I started with Lieut. Kellett in the Starling, on a magnetic tour of the principal extremities of this island. These positions were also secured in latitude and longitude, and thus determine its boundaries.

As Bow Island may be considered free from objections which would apply to basaltic or volcanic formations, I took advantage of this visit to ensure a most complete set of magnetic observations, in order to compare with Tahiti, now considered as a standard position.

In natural history the collection was materially increased, particularly by several varieties of curiously formed as well as beautifully coloured fish.

The water obtained at Bow Island is not wholesome, unless for immediate consumption; and even for this purpose, although none of our crew were immediately affected, I have considerable doubt. It was

repeatedly tried, particularly on board the Starling, but immediately became offensive when confined or put into tanks.

It is worthy of special attention, to other visitors, that the water obtained by digging within four feet of the flow of the sea, and allowed to settle, and then *re-baled*, was preferred by the natives, and approved by ourselves.

Previous to our arrival, we had anticipated much inconvenience from the presence of the natives, and contemplated various schemes to keep them away. Much to our surprise, gratification, and even assistance, we found them rather an acquisition. I suspect that Captain Beechey never could have seen the *natives* of this island. They must have been the natives of Anāa, belonging to the diving company of the Dart, then at anchor.

None of this party recollected the Blossom, with the exception of one, a cripple, mentioned in my journal of that date, whom I met on detached service, in the barge, at the S. E. cocoa-nuts. He perfectly recollected me, as well as my taking the drawing and dimensions of his extraordinary arm.

This race deserves a better character than Captain Beechy gave of the party; although the general habits of the low islanders are much the same. These men are some of the finest, best built, and handsomest I have seen with dark skins. Their tempers will almost bear comparison with those of Loochoo, excepting that they are to be preferred

for openness and attachment. In affection for each other, and to their children, they are patterns. In honesty I believe them to be above the generality of uncivilized beings. Living as they do by fishery labour, it is not to be supposed that any great beauties would be encountered. They are generally as good-looking as the Sandwich islanders. All women in savage life are old at twenty, and ugly beyond that age; but there is a motherly kindness, something winning even in the oldest and ugliest, as we saw completely verified in their donations. The children are unaccountably pretty, and the only drawback is the unfortunate pest to which all thick-haired natives, even of favoured Tahiti, are subject. Even here, Tahitian fashions prevail: they shave the whole crown of the head, and cut the remaining hair short, to obviate the evil referred to. Some few indeed were exceptions, and on inquiry, I found that their brothers would not permit them to cut their long straight hair, because they used it for fishing lines.

We had daily opportunities of witnessing their feelings towards each other. As I dined at my tent, I caused a large iron pot of pea-soup to be made for them daily, which, with the addition of biscuit, was regularly placed before the party encamped at the tents. Until all were served, in leaves provided by themselves, they rarely commenced, and in many cases took their portion to be again subdivided amongst their friends.

One word from me, even a cloud on my brow,

(not unfrequent,) would scatter them, not to return unless invited: and on one occasion some misconception entirely freed us from them.

Fortunately, this occurred when our undivided attention was required at the term days, and it is not improbable that our devotion to our work was mistaken for some superstition.

Both Kellett and myself had several attached to our staff, and upon our excursion round the islands one was borne as pilot. It was highly interesting to witness his reception at each village. Not a word of welcome was spoken. He seated himself, or was conducted to the place where he sat, and two or three passed their arms or hands on either side round his waist, locking him in a silent embrace, in which their faculties appeared to be entirely absorbed. As one fell away another replaced him, and sometimes I lost his services for some time. This caused a certain dejection in him for some hours.

With respect to eating, there is no difference in the sexes. The women do not pound the nuts for their husbands; nor did the men "lord it over them" in our presence. On discussing this subject with my friend Kellett, his reply was nearer the fact: "Nonsense! they are much too fond of their women."

On the other hand, the men conduct the canoes, fish, and when inshore, call the women to assist, which is responded to with cheerfulness. They go on expeditions to bring in Pandanus fruit, and

then it is the duty of the women, on their return from the beach, to carry up the stores and cook them. We never knew of violence amongst them, either by word or deed, in either sex, excepting on one occasion, and then it was quite a burlesque.

They do not appear to have any chief amongst them, but by common consent submit probably to the best and oldest present. Frequently when I attempted to obtain an answer upon this point, they would reply Mĭkănĕrў, (missionary,) or sometimes you are " Tăpănă paumotu."

On one occasion at the " S. E. cocoa-nuts" an old venerable man was introduced as " Tapana Paumotu," but I was shortly after informed that his son was the principal.

The objects used for barter were cotton, duck, handkerchiefs, tobacco, old clothes, &c.; other objects were considered merely as gifts. Men, women, and children smoke.

The clothing is much the same as at the low islands, only they appear to take more pains, and are more particular in the manufacture of the maro, worn by the males, and palvas of the women, than I have before observed.

If constant ablution can keep them clean, these should be so, for they are constantly in the water in search of fish, and failing in the scaly tribe, make up for it by the tridacna gigas, which is very abundant. The men appear to suffer very severely from the sun when thus employed; the whole body be-

coming suddenly covered with scales, which completely damps their animal spirits, and if we had not known the true cause, would have raised unpleasant surmises.

We noticed that at particular periods they would labour freely; but if asked to renew their exertions on return from any special employment, they could not be induced to do so voluntarily. I suspect, therefore, that some superstition is connected with their separate extraordinary exertions.

They are very expert fishermen; and with a light net I constructed, would speedily capture any large mullet which ventured within our bounds. It became literally a water hunt, all sexes joining with great excitement. By giving them any that remained beyond our immediate consumption, they kept constantly on the alert, and supplied our table freely.

The general mode adapted by themselves is by traps, formed by walls of stone on the flat inner reef. These communicate with each other. The Canoes literally drive the shoals of fish into these, when a yell of delight brings the shore department to their aid, and they are taken out, after being driven into the inner chamber, by bag nets of their own construction. To an observer the fish really appear to be bewildered, either by noise or the number of people, and never attempt to leap their walls, which are not above six inches above water.

Their food consists of fish of various kinds, and

pandanus nuts. The tridacna gigas, before noticed, they eat as we do oysters, but it was remarked, that they previously underwent very particular cleansing and steeping in fresh water. It is strange, that neither here, nor in any island of the Pacific that I have visited, do they use the clear crystallised salt which can be easily procured, but prefer a concentrated solution of salt water—at times very turbid, and generally anything but pleasant to the senses.

I am afraid, although they have persons amongst them denominated "missionaries," that their religious feelings partake little of Christianity; but rather that the emissaries from Tahiti, entrusted with the collection of the tribute, assume this distinction to suit their purpose. What this tribute may amount to from Bow Island, (or Ocheow,) I am at a loss to conjecture, as during this season they were not seeking the pearl oyster, and the few pearls offered for traffic were very insignificant. They continue their superstitious observances still, by offering fish, parts of turtle, &c., tied up in small baskets and attached to trees, and devote particular cocoanut trees to the taboo.

Their mode of burial is European, and some trouble is taken in covering the grave with fine coral sand. From what we could collect, they were generally healthy; few deaths occur, and women at thirty had five or six children. In the course of an examination of the island, we calculated the

entire population at from two hundred and fifty to three hundred souls. Only five cases of malformation, goître, or elephantiasis, were noticed. They appear to have few wants, are contented, and probably as happy as any as we shall meet. I sincerely trust that we may have as good cause to recommend those whom we may visit in our progress, for good behaviour, freedom from intrusive habits, &c.

Previous to quitting the American continent, I was possessed of the generally received idea that these islands were constructed on the summits of submarine mountains, and probably of volcanic origin. My mind, at that period, was closely engaged in the absorbing duties of our employment, which called for undivided energy and attention. On quitting the coast, my attention became directed to this particular subject, and the means of investigating it; and the anticipated result of course met with some share of interest. But I fully arrived at the conclusion, that corallines could not exist or work beyond a certain depth, and that the result of our boring would terminate in sand, or marine clay, usually designated pipeclay. It is well known that these were my opinions, frequently canvassed, and that I did not subscribe to the idea of "no bottom after fifty fathoms," and fully intended to test this question also. I could not conceive such abrupt elevations.

As our experiments proceeded, I felt still more confirmed, and, although the outer soundings had

been reported "coral rock," I was determined to test the matter more severely, as I know how readily men take the report of the man in the bow sounding, rather than satisfy themselves by arming the lead. The course of experiments, as far as a thousand fathoms, was intrusted to my energetic friend Kellett, who I felt well satisfied would leave no blanks unfilled.

The results were after fifty fathoms, the probable boundary of the coral, entirely *sand;* and coral sand at depths, ranging from fifty to nine hundred and sixty.

This shows how very minutely such operations should be conducted. Had we sailed without recourse to this proof, the report would most certainly have been erroneous, and on my head it would have rested.

Referring to the structure of these islands, and of this in particular, I certainly, as an actor in these investigations, and as a general observer, cannot subscribe to their uniformity of shape, or any other speculative peculiarities. I cannot subscribe either to the idea that the corallines build to suit their convenience under any peculiar system, nor that the openings in all the islands are to leeward. I have named two which have them to *windward;* Matilda Reef is No. 3; and Bow Island has it rather to windward than to leeward.

On the principle that the weather side of these

islands would intercept seeds, plants, birds, &c., we must naturally concede that vegetation would first commence there, and be better maintained. That the portions to leeward, or to the S.W., are not generally so well studded with trees, ought rather to be attributed to the S.W. rollers, which in light winds roll *heaviest*, and sometimes over all. But I have remarked that where vegetation has succeeded on isolated portions of the southern side of Bow Island, and more particularly on the S.E. angle, there it is found to be *more luxuriant*.

The gradation of the exterior as well as interior shallow portions or belts of Bow Island, do not present anything beyond the ordinary course to be anticipated. The corallines naturally commence their operations as near the surface as they can find convenient material; and it is rather a curious fact that their first building is circular, and seldom exceeds ten or twelve inches in depth, to a diameter of as many feet, (frequently exceeding it,) and this is not subject to depth. The inner coral belt does not mark an increase of depth; it is not the wall at which the sudden depression takes place, as generally assumed. This belt confines the coral sand, which is much whiter, within its bounds, and thus causes a delusion; but upon close examination we found the shelving gradual to the ship. This does not arise from a formation, but I should rather say from the

preference of the corallines for the depths from nine to twelve feet. In all the openings or boat channels the shelving was but slight.

Although the interior parts of the lagoon, which vary from twenty to thirty fathoms, may generally be assumed as sandy bottom, still there are frequent coral patches, which, although generally yielding, occasionally retarded our operations.

It is my firm conviction, and the same opinion was entertained by others, that Bow Island *decreases* at most of its uncultivated portions. I say *uncultivated*, because great care is taken by the natives to preserve and keep up a succession of cocoanut trees; and even those well grown are not hardy. From my own experiments in raising plants, I am satisfied that the soil of coral islands is not favourable to vegetation generally; and the hosts of rats which infest them form an insuperable bar to rearing any of the smaller plants or fruits.

A garden was established, but failed, although we had two dogs on the watch. However, we left the pea of Socorro, sweet potatoes, peach stones, and walnuts in the ground. The rats suffered the potatoes, Indian corn, and English peas to spring up and attain several inches in height, which induced us to hope they were safe, but one night they cut them off close to the ground.

Previous to our arrival at Bow Island, I had mentioned to Kellett and others one little islet with a sandy beach, where I had deposited corallines (in

1826) to bleach, before I ran to the southern cocoa-nuts, and had selected it as a test as to any increase or decrease in fourteen years. This islet *does not exist now*. No coral island now exists within the lagoon, although there are rocks scattered on the reef patches, on which a bird might perch.

The water near the observatory, precisely where the Blossom was, is deeper, our pinnace, deeply laden, easily reaching the *beach*. The opênings between the patches of vegetation on the north side are complete, and a light boat might float to sea at high-water without difficulty. These channels are dammed for fishing purposes, and have generally a fall inwards of one foot until low water.

On the southern side similar openings were noticed, but throughout the whole external belt there were no signs of living active corallines. At the southern station the rollers had thrown up immense *stratified slabs* of compact coral limestone, in which shells and spines of echini were profusely embedded. This could not be a coralline formation, but rather pipeclay beds hardening under water. They were very sonorous. Specimens were preserved.

The tides on the outer reef afford a proof that the time of high-water conforms to general laws, and that the time of high-water, full and change, may be assumed as two hours forty minutes; rise two feet nine inches.

The weather during the last fourteen days of our stay was very unsettled, I suspect by reason of the

termination of the S.W. monsoon. Very heavy rains and smart squalls incommoded us, but did not retard our labours: and although our working parties were much exposed, (particularly those constructing the pier, who almost lived in the water,) and drank perhaps too freely, notwithstanding my caution, of the beach water, we were unable to trace any evil effects from it.

The extreme caution with which I have generally watched the exposure of my crew was possibly a little relaxed here; but I am satisfied that had I adopted more decisive measures to prevent the use of the island water, and had restricted them to an allowance which we could ill spare, illness (probably scurvy) would have ensued. Whenever cocoa-nuts could be obtained they were given to them as well as lime-juice. But it was remarked that in no case where recourse was had to the surgeon, was it attributed to this visit; and none of the cases were from the working party; they were principally from those confined to the ship.

In the Starling, several cases of severe rheumatic fever occurred, but they were not employed on the boring duty, but chiefly on the survey.

At the termination of the quarterly observations, our observatory and tents were embarked, and the ship moved near the entrance, in order to take advantage of the first opportunity to get off. We were compelled to *wait* from the 23rd until the 28th of March, before the wind allowed us to fetch out.

This, I think, proves the entrance not on the *lee* side.

At the period of the Blossom's visit, the wind and current, on her entrance as well as exit, favoured her; but no sound conclusion or direction for navigators could be deduced therefrom. A *fair* wind out would be a *foul weather* wind inside. In both cases, on reference to Blossom and Sulphur, the winds at entrance and exit ranged from east to E. N. E., or leading winds.

We found that the time of entry or exit depended also on the time of high or slack water, and that it was necessary to watch this at the entrance, as the velocity of ebb, when much water had been forced into the lagoon, prevented the ship from steering. With our chart before us, we knew to a nicety what wind would suffice, and how far we could venture. But it is at all times a difficult place to enter with a vessel drawing over fifteen feet. It cannot be entered against the ebb without a breeze which would command six knots at least, as the current, which has about one foot fall, runs above four knots.

Approaching from seaward, the state of the current can generally be pretty fairly estimated by the "tail race," which sweeps to sea about three quarters of a mile. The instant this slackens or ceases, the entrance may be approached. The starboard side close to the breaker line is the boldest, but a rock near the *inner* point, having only nine feet on it, must be

avoided. The two cocoa-nut trees over the western point *clear* of the bushes notes it, as well as one on the opposite side. These two rocks form the gateway of the channel; and as all the rocks are *plainly visible*, they are easily avoided.

We now took our leave of Bow Island, shaping a course for Chain Island or Anaa, intending, if landing was practicable, to fix its position.

On the morning of the 29th we saw the two groups; about eight, Melville Island; in the evening Bird Island; on the morning of the 30th Croker Island; and at dawn on the 1st of April Chain Island. About seven we had approached almost within hail, when we were visited by a canoe, from which we took a native pilot, and passing close enough for the native to hail his friends and desire them to bring off pigs, &c., for barter. We rounded to and obtained soundings, one hundred and seventy fathoms *sand*, at half a mile from the shore. We afterwards tried about one mile off with nine hundred and forty-six, without gaining bottom.

An old native, who assumed some degree of authority, paid us a visit, and intimated that no pigs would come off unless the boat was sent in for them, as well as to exhibit what we had to traffic with. The cutter was accordingly despatched, but not succeeding, and finding the canoes had left me more visitors than I wished, I determined to take them in-shore and try if I could succeed. On reaching the safe water, men, women, and children swam off in great

numbers, and the only difficulty I experienced was in preventing them from thrusting their pigs into the boat. Indeed, I began to fear I had not wherewith to answer their demands. However, putting a roll of duck into the hands of the chief, who deliberately measured it, fourteen large hogs were awarded for twenty-eight yards; which was at the rate of one shilling and eightpence per hog. It was not without difficulty that we cleared the mob, whose heads impeded our oars. Some few shells were obtained, but none of value, nor was even a middling pearl offered. At four we bore away for Tahiti.

The natives of Chain Island are remarkably well formed and well featured, although of a darker cast than those of Marquesas, or Tahiti. The women are more masculine, probably from frequent exercise and exposure in the water, and probably less changed by civilization or the introduction of European clothing. Their hair is very beautiful, reaching in strong wavy tresses to the middle, strongly reminding one of mermaids.

Two very fine young women clung to our boat for a considerable time. It was useless to desire the crew to make them let go; they were fascinated, and I was really ashamed to treat them rudely. They begged hard, as I understood, to take leave of their brothers or relatives, to whom I had given a passage, and were accordingly towed off; but on reaching the ship, then more than a mile from the shore, they struck off for a canoe near us. Those

in the canoe refused them admittance, and as we sailed away they were seen gambolling like Nereids.

Hitherto we had experienced light winds, probably owing to the vicinity of the islands; but shortly after quitting Chain Island the breeze freshened, and at half past six on the morning of the 4th we dropped anchor in Matavai Bay. I had forgotten that the Tahitans were one day in advance of us, the missionaries having brought their time from the westward; we were therefore obliged to change our Saturday for Sunday.

END OF VOL. 1.

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